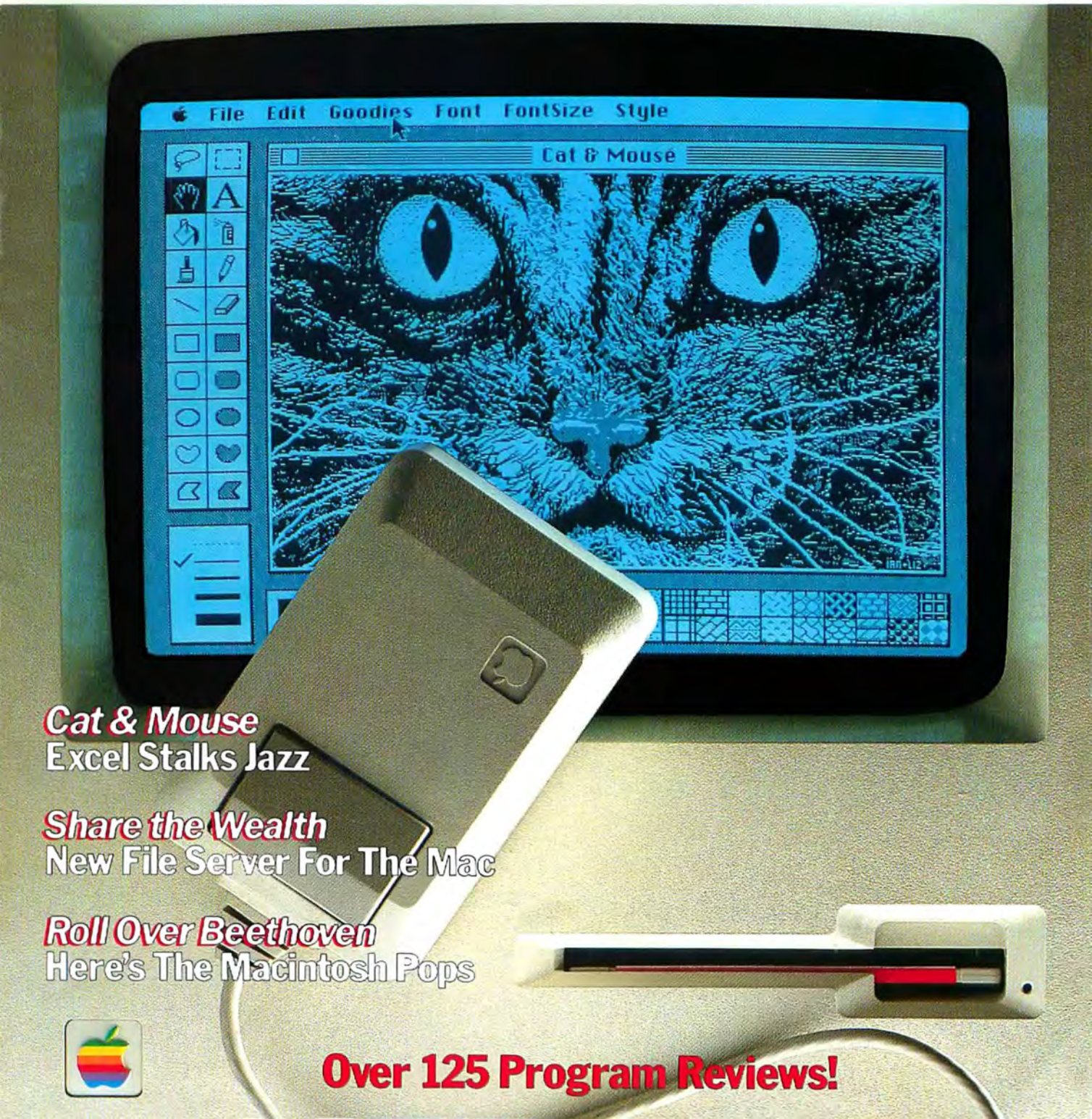
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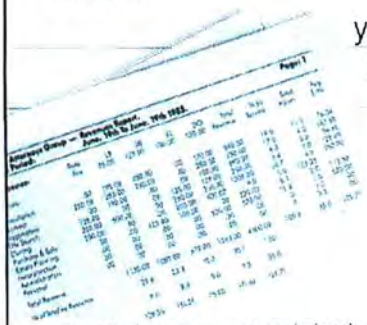
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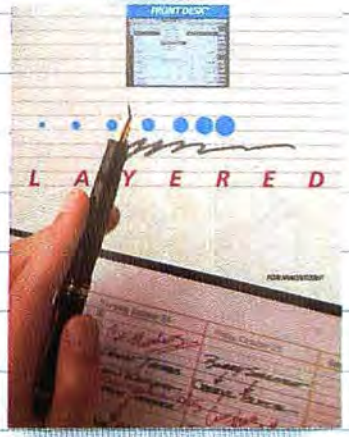


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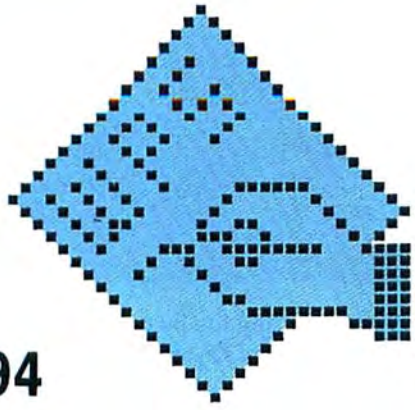
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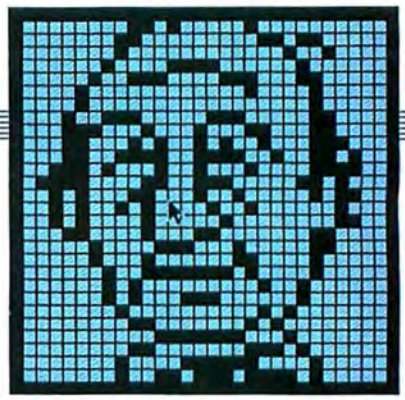
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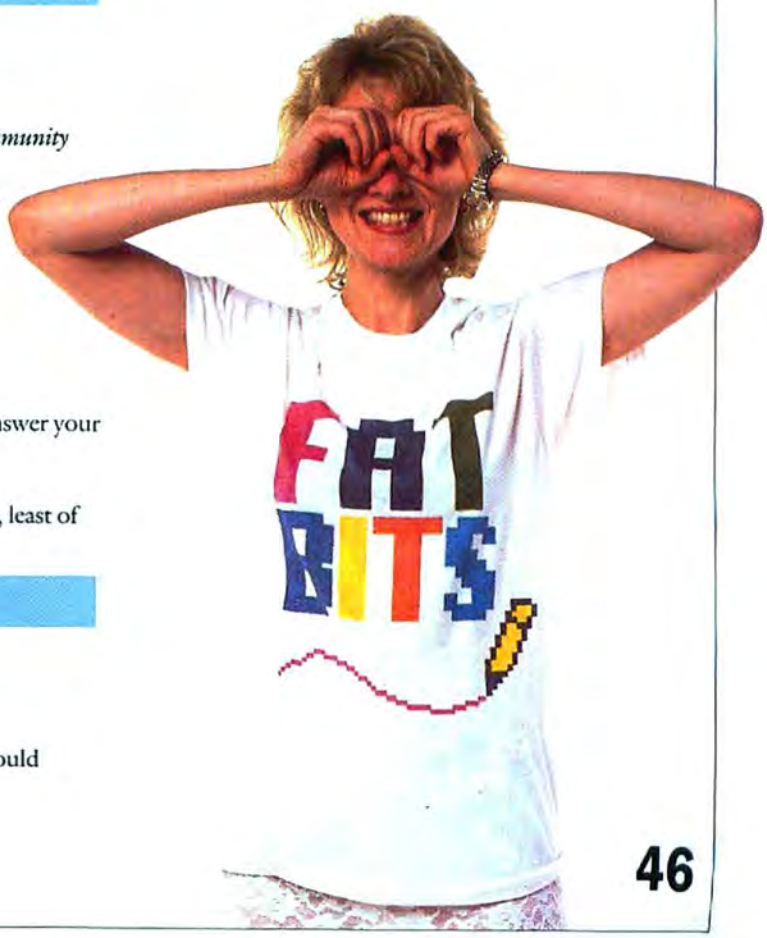
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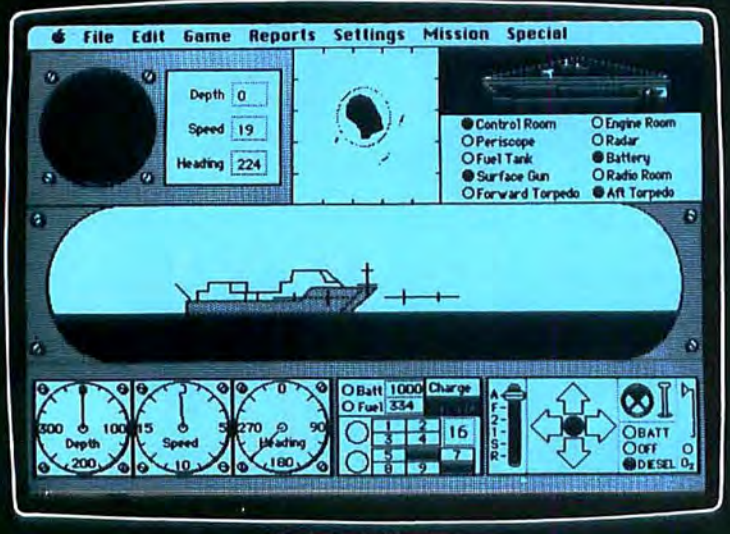
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ANOTHER APPLE RITE OF PASSAGE

PROBABLY THE MOST OFTEN-quoted Chinese curse (at least by Occidentals) is the one that goes, "May you live in interesting times." The implication is that the more that is going on, the more there is that is going wrong.

Well, things have been pretty interesting in the world of the Macintosh lately. But, Oriental cliches aside, not all news is bad news, even news that must first be viewed with mixed emotions.

The recent shakeup at Apple Computer is a good example. Let's face it, dropping 1200 people from the payroll, kicking a founder so far upstairs as to place him in corporate *purdah*, and unannouncing needed products does not make for a delightful picture of health. In article after article, both in and out of the computer-oriented press, implications and outright forecasts of Apple-Armageddon have been a popular editorial pastime.

But the Macintosh is in no danger of becoming an orphan, because these measures by Apple have strengthened the company's ability to survive.

If you had looked at a flowchart of Apple's organization a year ago it would have appeared quite strange. There were really two companies grafted one atop the other, like those cactus plants you can buy that feature one oddly-shaped plant attached piggyback onto a different variety. But no matter how carefully you tend such a plant the graft almost always has to fail and both plants will die.

In the past, Apple was composed of a company that made the Apple II line of computers and another company that made the Macintosh and Lisa machines. By the middle of this year, the graft was beginning to fall apart.

The overall marketing direction was never made clear and needless duplication began to add layer upon layer of bureaucracy to an organization that couldn't truly function without being able to quickly respond and react to the rest of the industry.

By bringing both halves of the company together, Apple Inc. appears to have recognized the fact that the Macintosh and the Apple II can both co-exist as product lines and that the products can be overseen by the same people. There was a miniature war going on within Apple between two camps, but the new direction has melded the two camps together into one powerful and unified entity.

But look what they've done to Steve Jobs.

I have never met Steve Jobs, but I will go on record as saying that he is one of my personal heroes.

Sure enough, the people who bought Apple III's (which he axed) bear him no love. And yes, from all reports that I've heard he has a side that is far from loveable. But look what we all, as a community of computerists, have gained from this one man's work and vision.

Without Steve Jobs wanting a company, and not just a computer to hack on, there would not have been an Apple Computer Inc. complete with its own special ideal of what a personal computer should encompass.

It's easy, even automatic, to say that without Steve Jobs there would have been someone else, that the Computer Revolution would have happened anyway. But, I don't think so. Not in the same way.

There might be just as many microcomputers today without Steve Jobs having been around. But I don't think that I'd be sitting here typing on one (certainly not on anything like a Mac) if it had been, for example, IBM that started the ball rolling.

Apple has always had a unique idea, an idea that still plays in Peoria and not in Boca Raton.

A personal computer is designed for a person. Direct access to a microcomputer is a tool that should be placed in the hand of Everyman.

Thanks to Steve Jobs, and of course to many others such as Steve Wozniak and Mike Murray, this dream was fleshed into reality. I remember the excitement back in 1978 when I bought my first Apple II. It was a computer that I could really learn to use and understand. Only the excitement of buying a Macintosh in 1984 ever matched that because the Macintosh is the first computer that can be simply intuited, understood at almost a primal level, as well as allowing the inveterate hacker deeper challenges.

Obviously, the Macintosh is a continuation of Steve Job's dream.

But, all that said, it has to be added that the Macintosh seemed to possess Jobs, to occupy not only center-stage in his mind but stage-right and stage-left as well. In the long run, this attitude would have had to hurt the Macintosh by interfering with the ongoing successful marketing and continued development of existing product lines while the new Macintosh Philosophy was bring pioneered.

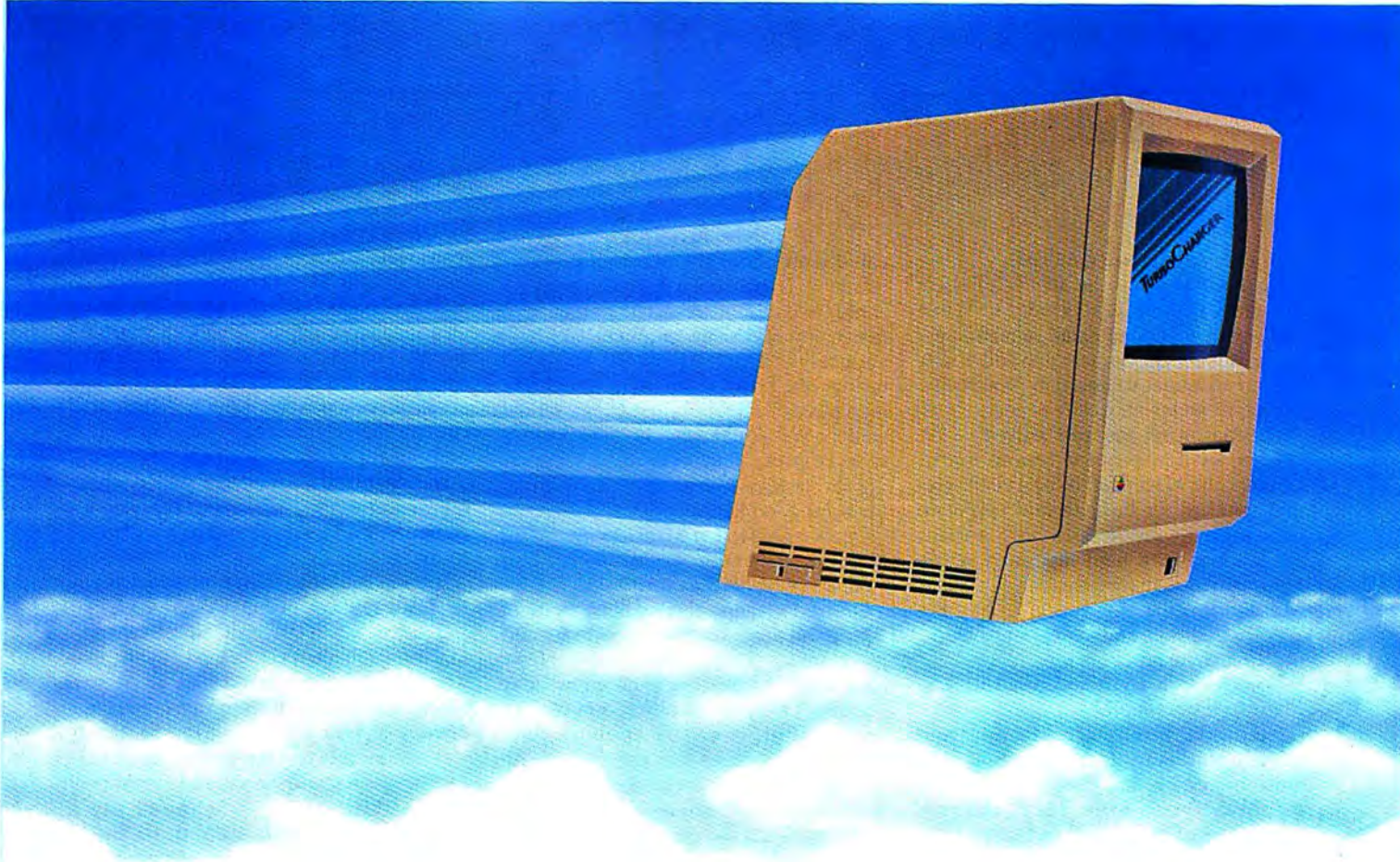
Apple has had yet another rite of passage. They have come out of it a maturer and wiser company.

Yet more interesting developments have taken place courtesy of the secondary suppliers—the software and hardware manufacturers. In this issue we take a look at *Jazz* and *Excel*, two of the most-awaited new packages for the Macintosh.

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And they're interesting indeed.

No need to view the advent of these programs with mixed emotions. While the articles following detail our findings, giving out applause where due and pointing out areas that still need improvement, one point seems very clear to me.

The Macintosh has truly arrived.

There are now very few reasons not to consider the Macintosh to be a viable second standard for business and corporate uses. Indeed, in most cases (with perhaps the addition of a hard disk such as the Hyperdrive or maybe the as-yet unseen MacBottom) the only reason to buy Big Blue is tradition and cover-your-behind ordering strategies.

Now you can say it and mean it: The Macintosh does it all.

Meanwhile, here's a new Mac magazine coming your way. I certainly find that quite interesting, and I hope that you will too. We're going to be a little different from some of the others and forgive me while I indulge in just a little first-issue philosophizing:

The Mac is a tool and we are a magazine devoted to that tool. I suppose that we could write about the Mac as if it were a hammer. To get somewhat analogous we could have a lot of articles on the shape of that hammer, maybe we might even talk about some simple uses for such a tool—nailing one board to another, straightening a piece of wire, pounding out a dented fender. We could go into the various styles of grips, which ones make hammering the easiest, and what materials make up a real good hammer.

Or, we could do what **MacUser** *does intend to do, we could teach you how to take that hammer and build a boat with it.*

Our reviews, and there will be many of them, will focus on placing software and hardware into an overall perspective. If we review a word processing program we're not about to limit ourselves, and you, to simply what is in the manual. Our authors and editors will try to come up with new ways of looking at products, new methods of learning about them.

Our goal is to be the place to come to learn about the Macintosh. Of course we will have novice-level articles, but how many more times do you want to read such information as double-clicking an icon will launch a program? Or how wonderful the Undo command is?

When you bought the Macintosh you identified yourself as a person who is already either technically well-versed enough to understand why the Mac is so powerful, or a person who is not afraid to cut through traditional "wisdom" to find out the truth for yourself.

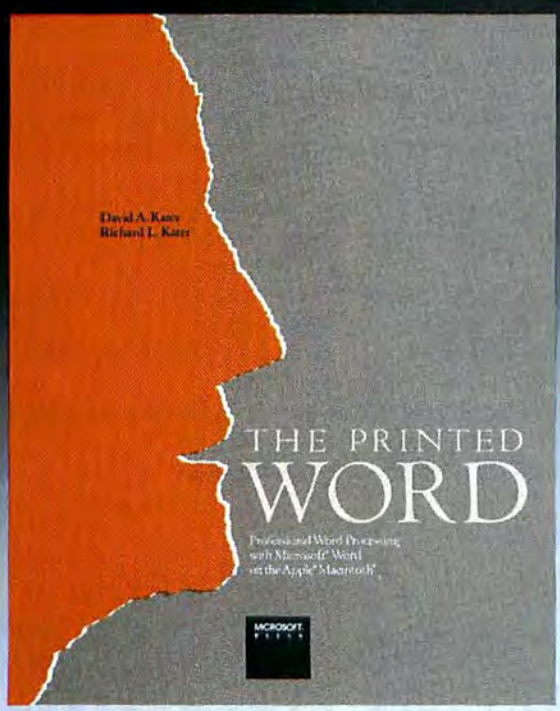
You identified yourself as a person willing to accept the challenge of bringing a computer into your life and to learn how to use it.

You *will* be able to learn from **MacUser**. Each issue, most of our stories, reviews and articles will attempt to place the Macintosh in perspective for those of us who are still "the rest of us" but to whom computing is no longer quite the mysterious realm that it used to be.

We want you to take your own ideas, truths, desires and needs and work on them with this most wonderful of new tools in order to fashion them into something new, something needed, something that maybe we can't even foresee.

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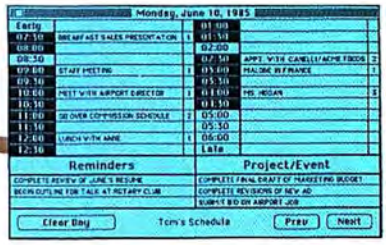
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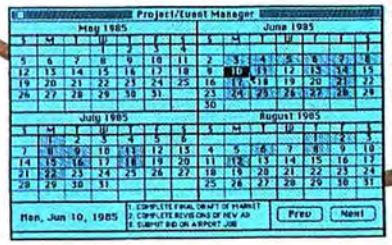




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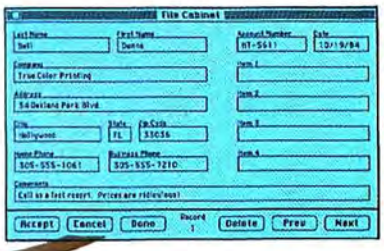
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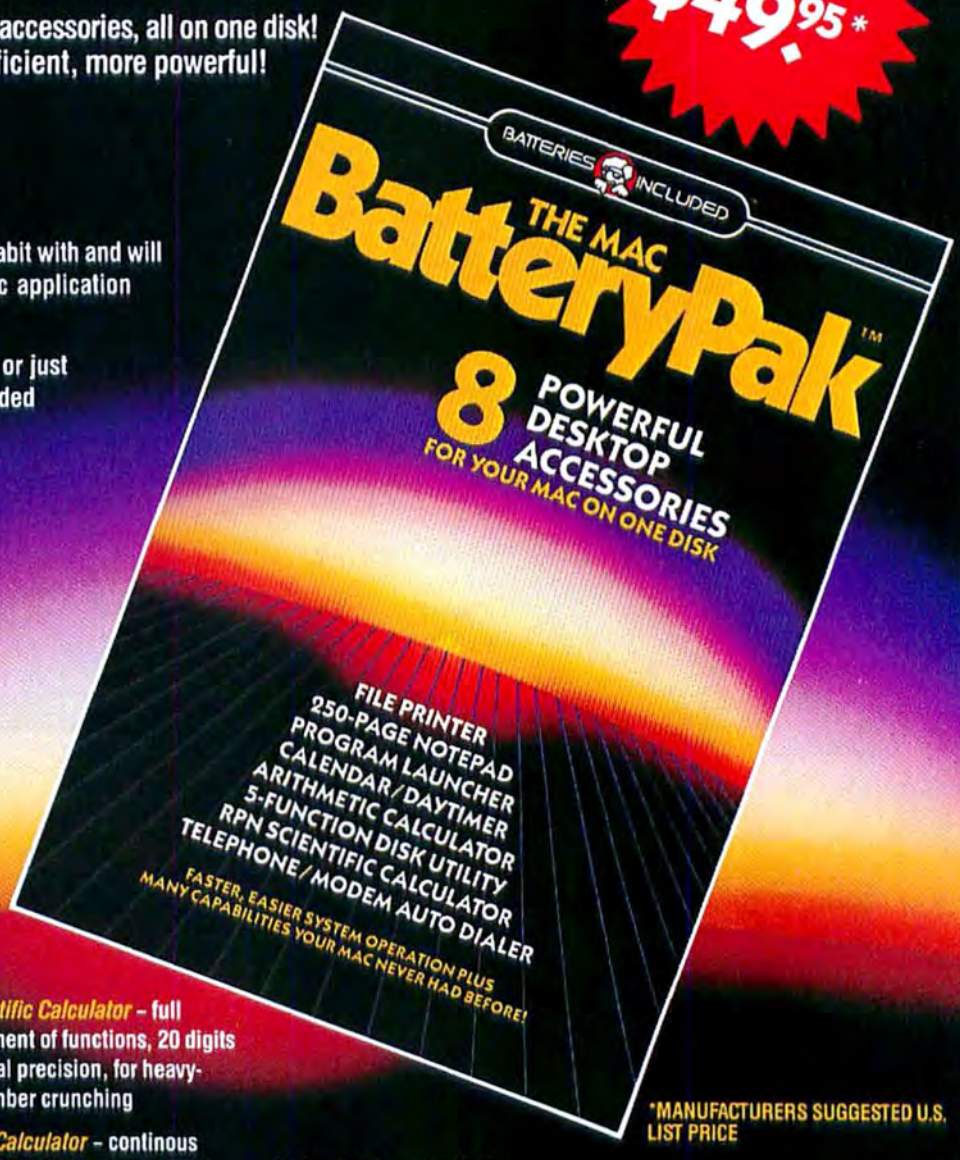
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Who, Us?

CONGRATULATIONS ON THE FIRST issue of *MacUser*! The *MacUser* staff has already established its credentials not merely as expert-level Mac enthusiasts, but as objective consumers, too. A welcome combination.

It's a necessary combination, too, if this "computer for the rest of us" is to thrive in the fierce micro-marketplace. I hope *MacUser* will become a vital source of constructive criticism about the machine we've come to love.

I'm a TV writer and producer and I use my Mac for scriptwriting and especially for rough ad layouts and storyboards. I chose the Mac for its ease of use, and because what-you-see on the screen is what-you-get from the printer. But already I'm spoiled. Let's face it, the Mac innovations, so stunning in "1984," are old news as 1986 draws near. I know that ROM and disk drive upgrades are coming, but I want more. For serious graphics applications, the Mac cries out for a tall screen that displays an entire 8½ × 11 page at time, and software to drive it. Ultimately I'm hoping for a "Flat Mac"—a portable Mac with a legible flat screen.

I'm willing to wait patiently for a whole year for those innovations. To keep me happy in the meantime (are you listening, Mr. Sculley?) I hope that Mac prices drop substantially, so business users will recognize the Mac Office for the terrific value it is.

Naturally if none of these things come to pass, I'm holding *MacUser* responsible.

Arthur Greenwald
Creative Services Director
KDKA-TV/Pittsburgh

Nah, Not Real

I CAN'T TELL YOU HOW PLEASED I was when I learned that there was going to be a magazine devoted to the McIntosh (though I must admit to some misgivings based on the fact that you don't seem to know how to spell it). The Granny Smith and Golden Delicious folks have gotten all the attention and publicity for far too long.

I note your reference to "hard-hitting reviews" — Great! Our industry has too long been victimized by sleazy, inferior smudge-pot manufacturers, and the last pruning hook I bought was a crime.

I'm a little puzzled by your reference to "software," though — are you planning some kind of expose? Our industry has very high standards, and I'm not sure that accusing honest orchardmen of shipping soft fruit is the way to start a new magazine off on the right foot.

In closing, I wish you all the best, and I'll be looking for your first issue down at Elmer's Feed and Seed Emporium—better make sure he's on your list.

Sincerely,
Aunt Emily

Explore New Worlds

A QUESTION OF DIRECTION ARISES when a new magazine is born: What part of the Mac constituency do you plan to serve?

It is not a simple or trivial question as we have seen many well-meant computer magazines founder on that shoal. I doubt, for example, that *MacUser* will be a "Gee Whiz!" magazine, with little interest in how your users can achieve impressive performance.

The problem is the extreme breadth and depth of these machines! I liken it to going up a river, with many tempting side streams flowing into it. Most of us simply do not have the time to really explore all of the side streams (Graphics, Sound, Programming, Communications, and Applications, to name some major ones), but our interest in what is there is still active. Many of us, specially when we are getting started, have our hands full making the applications productive for our businesses; yet later our interests will broaden.

I broke in on the Apple II + with *Softalk* as my guiding star. It was only as my interests broadened that I found the real value of that magazine: It was so rich in tutorial material that it was the first place I'd look when I got curious about other aspects of the II + . When we speak of the versatility of the II + , we must exponentially expand our meaning of the term when we apply it to the Mac! I would hope *MacUser* will have a similar value. It would be a real accomplishment!

Like many opportunities, you have a real challenge facing you. You have good people on your staff, who I'm confident will rise to the challenge. You also have the best wishes of the Mac community for success!

Sincerely,
Bart Thomas

Aiming For The Bullseye

THE VERY APPEARANCE OF YET another "targeted market" computer magazine says two things very quickly about the machine itself: (1) Vendors (hardware, software and after-marketers) are ready to position support product[s] and (2) end users have another resource available to them.

For all Mac users this can only be a great thing. Perhaps not "insanely great" as the halcyon days seemingly have past but, much more importantly, dependable, creative and productive.

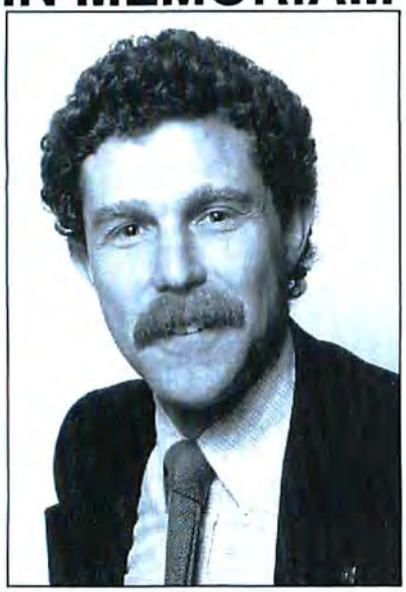
MacUser's charter seems clear to this writer: sustain a timely and comprehensive Macintosh overview; provide real-world solutions to real-world situations and their managers (no matter what their level of sophistication is); offer product reviews and updates in an unbiased as possible fashion; solicit reader input via print or electronic media.

The time has come. The Mac world is ready for a magazine of *MacUser*'s potential. Is *MacUser* ready for us? We wish you good luck and best of show.

Sincerely yours,
Harry Conover
CEO, Computer Simulated Sports, Inc.

NEW ON THE MENU

IN MEMORIAM



In memoriam: Andrew Fluegelman, a respected colleague and gentleman, and creator of the Freeware concept.

MacUser Takes a First Look at the Amiga

The launch party was very nice and so is the Amiga.

Commodore's new 68000-based Mac-alike is a serious computer. It has many features that Mac users would dearly love to see show up in a Mac case. The Amiga is a real multitasking machine. It is, as everyone must already know, a color computer. It produces good screen graphics, but on-screen text resolution is nowhere near what Mac users will expect. However, with the help of a single emulator program that was available at the launch, it is IBM-compatible.

One of the highlights of the demo occurred when the host took a stock copy of *1-2-3*, put it into one the Amiga's 5.25-inch drives (the normal drives are 3.5-inch double-sided drives, but a 5.25 can be plugged in just as easily), and ran *1-2-3*. Infocom's Dan Horn was heard to say, "That's it. It'll sell." He's right. The Amiga will become a top choice in the less staid office environments.

There was a lot of software running at the



launch. Some of it, such as SubLogic's flight simulator, was very impressive. Some, such as the only word processor (Arktronics' *Texteraft*), were not. *Texteraft* is very crude by Mac standards.

Multitasking and IBM compatibility aside, the Amiga's musical ability is nothing short of astounding. This machine is destined to be the musicians' choice.

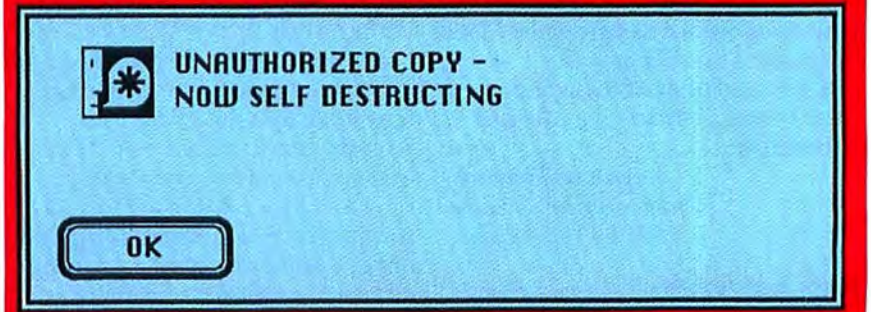
What does all of this mean to Mac users? Well, there's an impressive new kid on the block and **MacUser** is going to be taking a good in-depth look at it. We'll be keeping you informed.

BEEN BUGGED RECENTLY?

Some Mac software still is not perfect. Let us know about any bugs you find in commercial products. We'll print a list every month, and pay $25 to the reporter of the best bug, as selected by our editor in chief, a true bug expert.

If you can supply a fix for the bug, we'll give you a special award. Bug reports should include all the details: what you were doing when you found it, what Finder was on the disk, what fonts and desk accessories were in the System and anything else you can think of.

GOTCHA!!!



The prize for this month's most outrageous dialog box goes to *MacDraft* (Beta version) for its response to illegal pirating. Talk about playing hardball! Many thanks to the anonymous Mac user who sent it in to our offices.

Seen an unusual screen or dialog box? Share it with "the rest of us" by sending it to MacUser, 25 West 39th Street, New York, NY 10018.

P.S. *MacDraft* looks like a terrific program — watch for a full review in an upcoming issue.

UPDATES

Macintosh programs all seem to have a feature not often found in programs written for other computers: They evolve, and updates are released, and eventually you, the user, must wonder if you have the latest version, the most recent update. Every month in this space we'll tell you the latest version numbers (as of press time).

Finder	**4.1**
MacWrite	**4.5**
MacPaint	**1.5**
MacDraw	**1.7**
MacProject	**1.0**
Switcher	**4.3**
ThinkTank 512	**1.1**
Red Ryder	**6.0**
Helix	**1.3**
Jazz	**1.0**
Multiplan	**1.02**
MS BASIC	**2.0**
MS Word	**1.05**
MS File	**1.05**
MS Chart	**1.05**
Smartcom II	**2.1B**
VersaTerm	**1.52**
OverVUE	**2.0**
Desk Organizer	**Serial # > 8600**

New Word Processor and Professional Page Makeup System

JustText™, from Knowledge Engineering, is a new package intended to allow professional quality type to be set on the LaserWriter and other Postscript-compatible typesetting equipment. It came about because Bill Bates, author of *The Computer Cookbook* and *The Macintosh Cookbook* (due out soon), was dissatisfied with all the available Mac word processors. So he built a better mousetrap.

Within its clearly defined size limits, *JustText* is fast and very precise. A full range of commands lets the user create PostScript documents that may be printed out on any compatible printer.

MacUser will be looking at this amazing product in more detail soon. Look for examples of *JustText* output in our next issue. Further information is available from Knowledge Engineering, GPO Box 2139, New York, NY 10116. (212) 473-0095. List price is $195.

THE RUMOR MANAGER

Several companies will have software (in the under $300 range) that will convert virtually any hard disk into a volume server Apple will introduce a replacement for the ImageWriter by the end of the year The much talked about LapMac has been placed on indefinite hold, probably canceled A Mac with an 8½" x 11" paper format screen will be introduced at the January stockholders' meeting Ashton-Tate will unveil a major software package to compete with Excel and Jazz by the end of the year Telos Software will introduce a new graphics-based database manager for the 512K Mac as revolutionary as Filevision was in 1984 Apple will introduce a new word processor as a replacement for MacWrite before Christmas A Mac displaying 16 colors has been spotted in several places on both coasts.

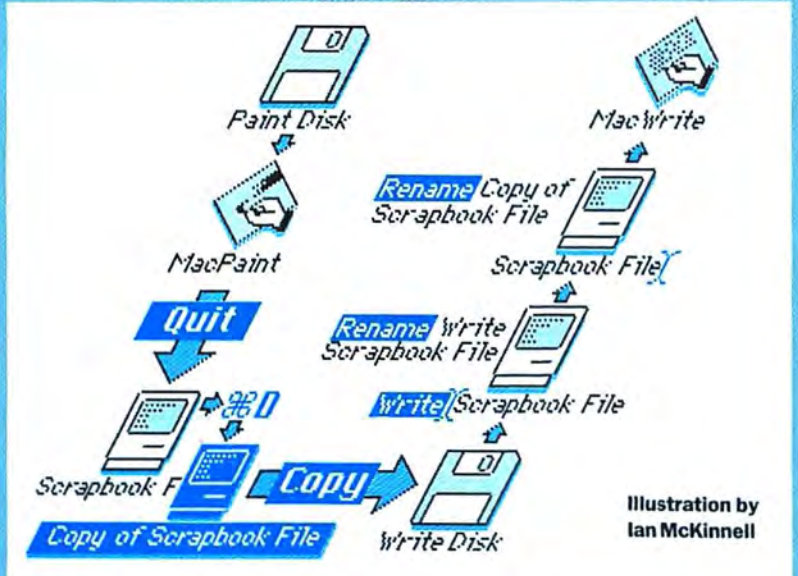


Illustration by Ian McKinnell

Here's a useful method of storing *MacPaint* images in the Scrapbook and then transferring it all into *MacWrite*. It may look complicated, but it means you can have specific images relating to each application without cramping the disk space.

BETTER THAN GREAT

The versions of *Wizardry* and *Ultima III* reviewed in the article "The Wizard is In" were prerelease Beta test editions. Sir-Tech Software and Origin Systems asked us to tell you that release editions might contain improvements. We're not sure that's possible, but if they say so . . .

THE MAC SOUNDS OFF

Looking for a way to showcase your musical compositions on the Mac? The *MacNifty Stereo Music System* simulates stereo sound by splitting high and low frequencies between its two speakers. It plugs into the audio output jack in a flash and provides surprisingly good sound at a price that will make you sing.

MacNifty Stereo Music System, $79.95 from Kette Group, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

MAKE YOUR MAC FASTER AND MORE USEFUL

DASCH

Western Automation's DASCH (Disk Acceleration/Storage Control Hardware) adds up to 2 megabytes of random access memory (RAM) to your Mac. This added memory sits in a small box and is set up to automatically run as a RAMdisk. DASCH normally connects through the printer port, although AppleTalk users have the option of hooking up through the modem port. It is externally clocked so that data transfer occurs at very high speed, and includes a "passthrough" port so that a printer can be used when DASCH is attached to the printer port. DASCHs can also be chained together (up to a maximum of eight units) so that a 16-megabyte RAMdisk is possible.

RAMdisks can improve the performance of the Mac by up to 1000%. Users of products like *Mac Memory Disk* (from Assimilation) know how dramatic such speed increases are. The advantage of DASCH is that users do not need to give up any of the precious internal memory to get the advantages of the RAMdisk. DASCH will also work with a 128K Mac, which cannot support a RAMdisk internally.

Of course, it's not all roses. RAMdisks are volatile. That means that everything on the RAMdisk instantly disappears when power is lost or turned off. Users have to load applications to the RAMdisk on startup and must be very careful to transfer data to permanent media (disks or hard disks) before shutting down. However, the increased performance usually outweighs the time taken by safety precautions.

And the price is pretty reasonable. DASCH comes in three versions. The 500K version lists for $495, the 1M (megabyte) version is $975 and the 2M monster is $1785. DASCH should be at your dealers as you read this. Or contact *Western Automation Laboratories, Inc., PO Box 3438, Boulder, CO 80307, (303) 449-6400 for more information.*

TRANSET 1000

Hayes Microcomputer's new *Transet 1000* is called an "intelligent multifunction print and communications buffer." Read that as "peripheral manager." The Transet 1000 can perform multiple operations while leaving the Mac free to do other work. It will serve as a printer buffer, a communications buffer, a multiport switch and a 24-hour standalone electronic mailbox.



The Transet 1000 is built around a Motorola M68008 microprocessor. It has 128K of RAM and 32K of ROM. At the back, users will discover two serial ports and a serial/parallel port. An optional accessory kit that contains all the required cables and a disk of operating and utility software will be available.

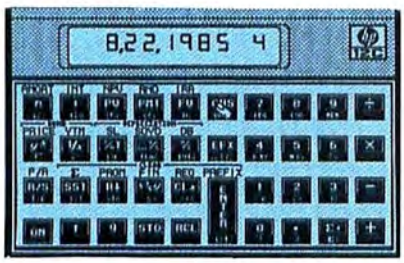
"Intelligent buffer" means that the Transet 1000 will compensate for the different speeds at which peripherals receive and process data. Transet 1000 will accept data from the Mac at speeds up to 19,200 baud (the Mac normally communicates with printers at 9,600 baud and with modems at up to 2,400 baud) and then hold data until it can be sent at lower speeds to printers or modems.

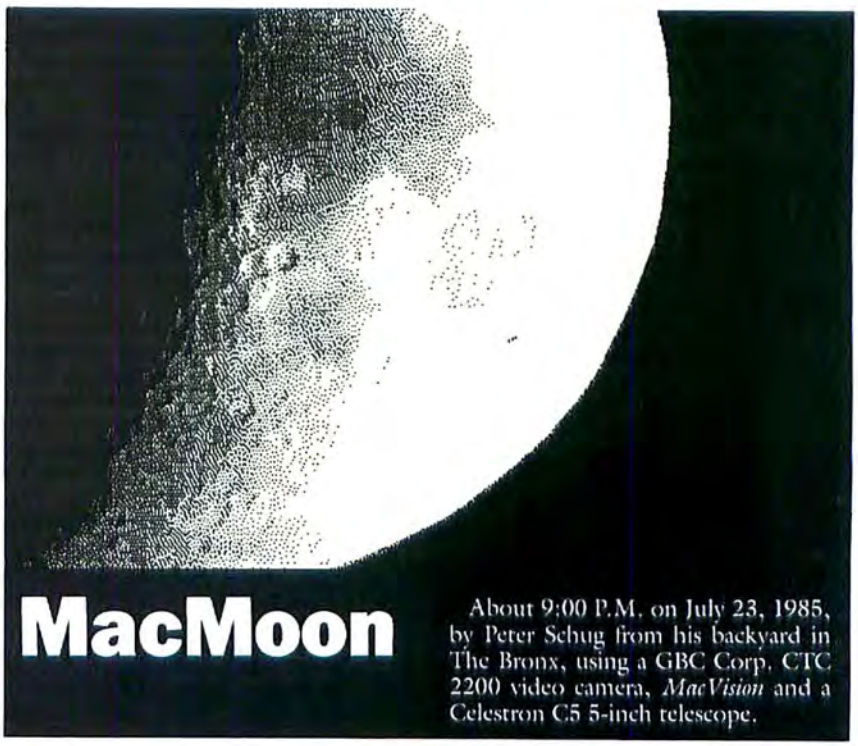
The print capabilities include space compression, pagination, automatic page numbering, format control, collated printing of multiple copies and time dating. Communications features include Xmodem and Xon/Xoff transfer protocols, overflow control and dynamic memory allocation. Data can be sent and stored by the Transet 1000 after the Mac has been turned off, enabling its use as round-the-clock electronic mailbox. And the Transet 1000 can do all that at the same time.

This small box can revolutionize the way the Mac uses its peripherals. The Transet 1000 should be at your dealers now. Its list price is $399; the optional accessory kit will be under $50. You can get further information from *Hayes Microcomputer Products, Inc., 5293 Peachtree Industrial Blvd., Norcross, GA 30092, (404) 449-8791.*

PROGRAMMABLE FINANCIAL CALCULATOR

Dreams of the Phoenix has the answer for all of us who just can't give up that special financial calculator. Their *Twelve-C Calculator* is a desk accessory that both looks and behaves exactly like a 12C. Users have the option to display all of the registers on the screen. Comes with many sample programs. Available September 1 from Dreams of the Phoenix, Inc., PO Box 10273, Jacksonville, FL 32247. (904) 396-6952. List price is $39.95.





MacMoon

About 9:00 P.M. on July 23, 1985, by Peter Schug from his backyard in The Bronx, using a GBC Corp. CTC 2200 video camera, *MacVision* and a Celestron C5 5-inch telescope.

(continued on page 146)

Business essentials.

If you

write letters,

issue purchase orders and receive material,

correspond with customers, vendors or other businesses,

need to keep track of facts, figures and faces...

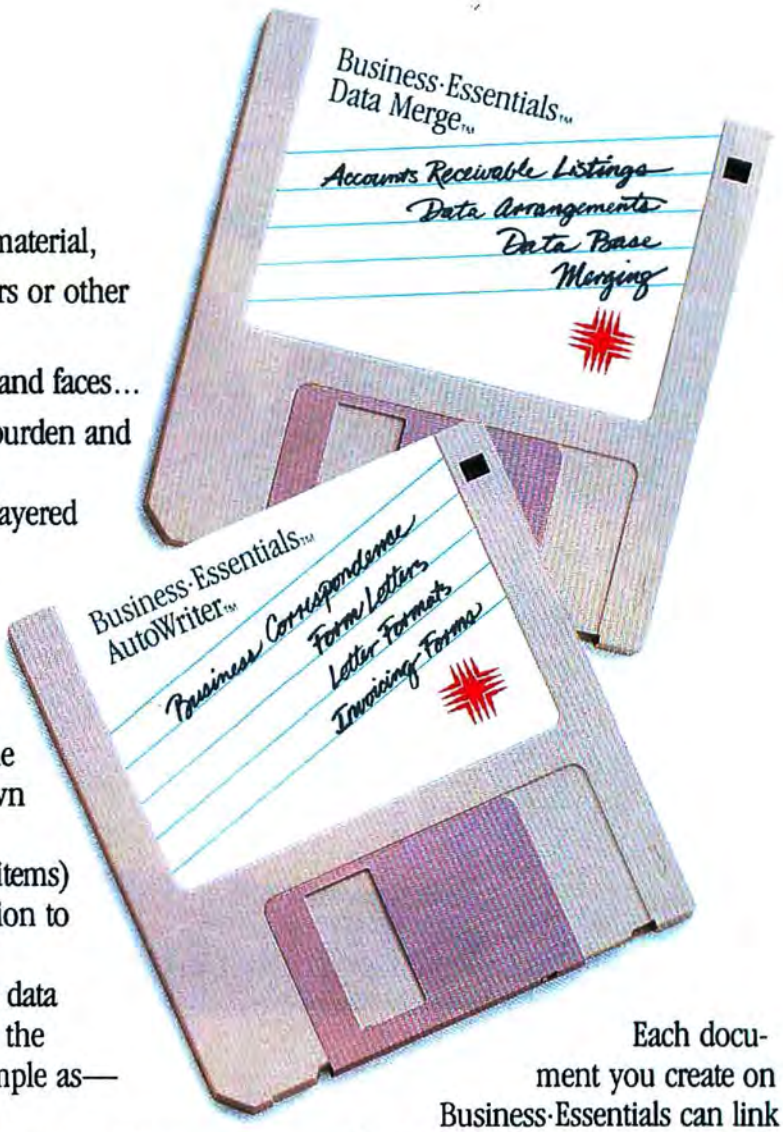
Business·Essentials™ will ease the burden and put productivity at your fingertips.

Business·Essentials is a double layered program which combines *word processing* and *data management*. Business·Essentials comes with a set of standard business letters and forms.

The word processing aspect of the program also lets you create your own letters, documents or reports.

The data manager (16 fields x 600 items) provides an integrated merge function to your letter or document.

Integrating information into the data base from your document or from the document to the data base is as simple as—point...click...merge!



For example, if you are writing letters to your customers, you can merge the letters with your data base of names and addresses. The program queues the letter, selects for printing and formats the names and addresses and any other pertinent information you have listed. The program automatically sequences the next name from letter to letter.

Each document you create on Business·Essentials can link with the data base. Documents as well as the data base can be rearranged, formatted or merged with uncommon speed.

Increase your productivity on your Macintosh™ with the power, ease and speed of Business·Essentials. You'll love how little it takes to accomplish a lot.

List price $79.

Assimilation™

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MAC & THE POWER USER



PHOTOGRAPH BY PETER SMITH

Notwithstanding the opinions of our esteemed contributing editor, Mr. John Dvorak (see page 152), there's an awful lot of rubbish talked about the Macintosh and the serious user.

Is the Mac a wimp computer?

MacUser magazine doesn't think so. We believe the Macintosh is one of the *most* powerful personal computers in the world.

In common with every other computer, it has its limitations, its quirks and those tasks to which it is best suited. But that having been said, the vast majority of Macintosh users truly coax only a fraction of the Mac's potential out of their system.

That's where MacUser comes in. As The Macintosh Resource, we'll bring out the best in you and your Mac. Increasing your productivity. Ensuring you value for money in your hardware and software purchasing decisions. Showing you new ways to solve old problems. Keeping you up to date issue after issue, article after article, review after review.

A subscription to MacUser should pay for itself, literally, many, many times over in the course of a Macintosh owner's year. By subscribing to MacUser you save over $20.00 off the newsstand cost. And if you ever feel we shortchange you editorially, we guarantee to refund any unused portion of your sbuscription on demand. No questions asked.

Because we're certain that together, MacUser and your Mac system are going to make a winning combination. Go for the burn! Fill our the coupon opposite and get the power of MacUser on your team.

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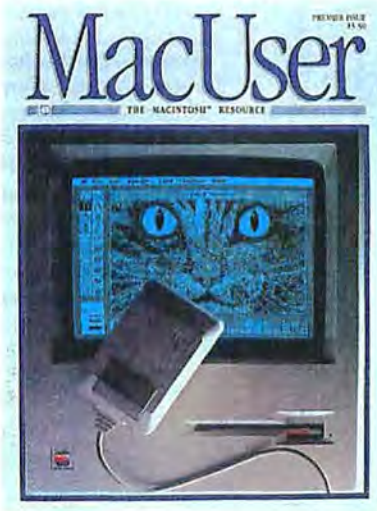
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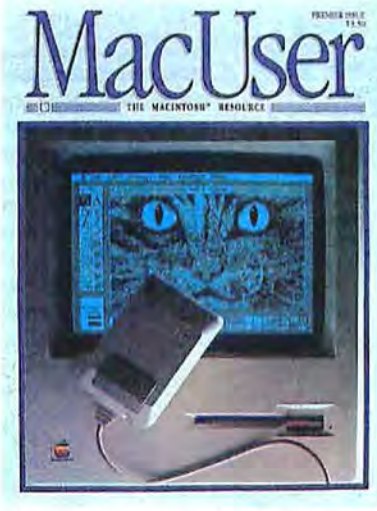
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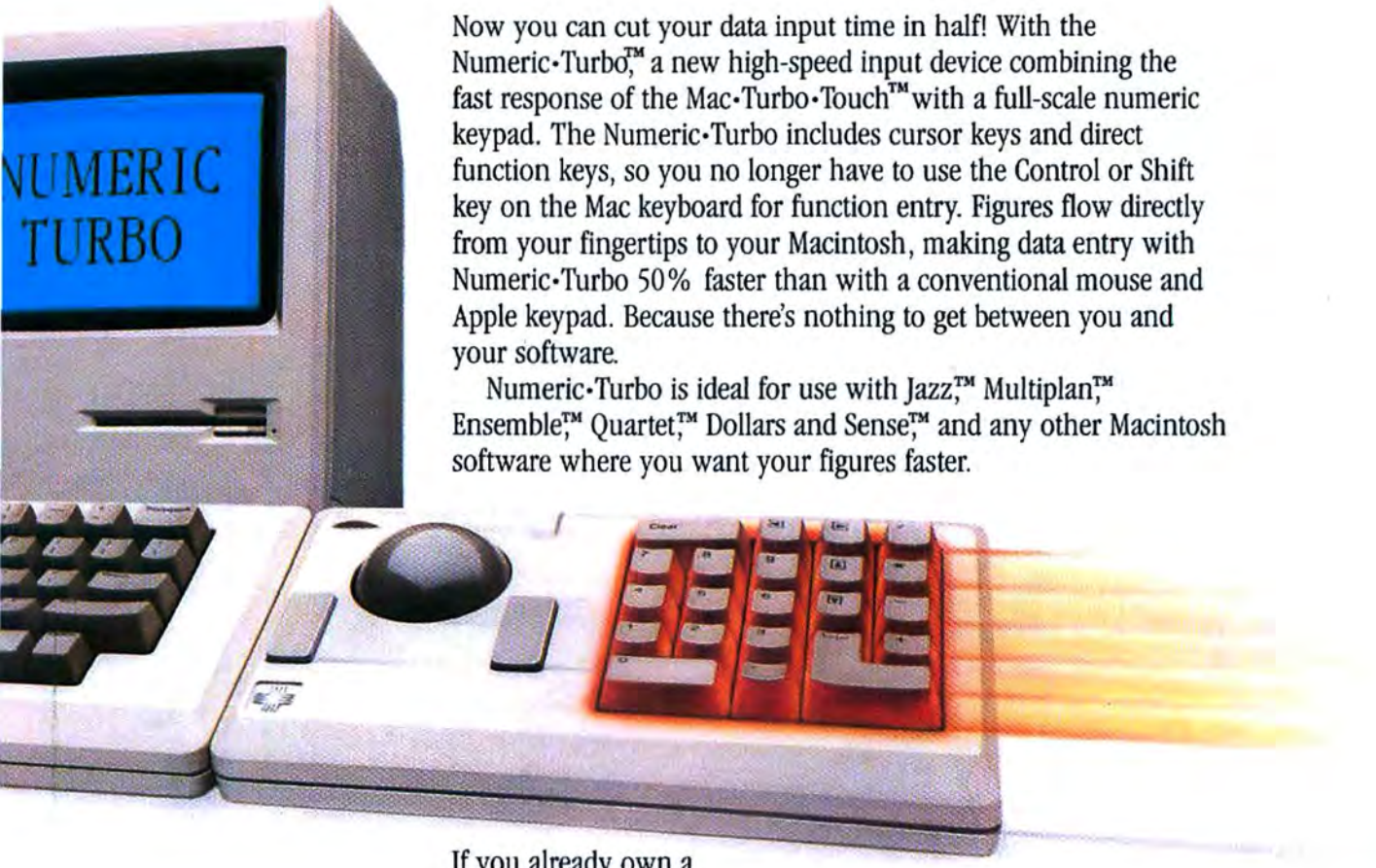
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Faster figures.



Now you can cut your data input time in half! With the Numeric•Turbo,™ a new high-speed input device combining the fast response of the Mac•Turbo•Touch™ with a full-scale numeric keypad. The Numeric•Turbo includes cursor keys and direct function keys, so you no longer have to use the Control or Shift key on the Mac keyboard for function entry. Figures flow directly from your fingertips to your Macintosh, making data entry with Numeric•Turbo 50% faster than with a conventional mouse and Apple keypad. Because there's nothing to get between you and your software.

Numeric•Turbo is ideal for use with Jazz,™ Multiplan,™ Ensemble,™ Quartet,™ Dollars and Sense,™ and any other Macintosh software where you want your figures faster.

If you already own a Mac•Turbo•Touch* and want to upgrade to a Numeric•Turbo, just ask your Apple Dealer for details. We've provided Dealers with upgrade kits that are easy to install and priced to please. And, we think you'll be more than pleased with how little it takes to accomplish a lot with Numeric•Turbo.

List Price $149

*The Mac•Turbo•Touch is another way to enhance your Macintosh's performance. This high speed input device is designed to respond as quickly as you do. The slightest touch of the gyroscopic ball positions the pointer quickly and accurately on the screen. The result is software that works even better, faster and more precisely.

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The hostess of a lavish masquerade ball has just been brutally strangled.

Fortunately, there's a suspect. Unfortunately, it's you.



Just slip SUSPECT,™ Infocom's latest interactive mystery story, into your computer and suddenly you are a newspaper reporter covering the blue-blood society event of the year, Veronica Ashcroft's annual Halloween costume ball. And every decision you make will determine the story's suspenseful outcome. Suppose, for instance, that while snooping about the mansion in your cowboy costume you decide to peek in the office. You simply type, in plain English:

>OPEN THE DOOR THEN ENTER THE OFFICE

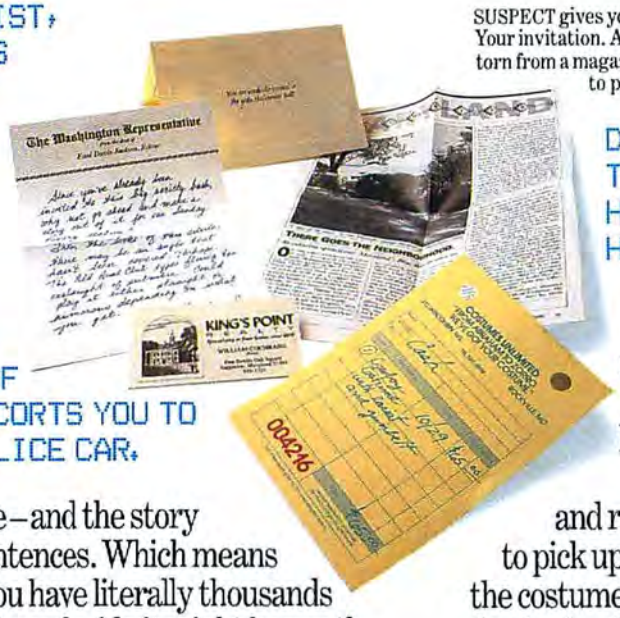
And the story responds:

YOU OPEN THE DOOR. SLUMPED BEHIND THE DESK IS THE BODY OF VERONICA ASHCROFT. HER MASK HAS BEEN PULLED OFF. AROUND HER NECK IS THE AGENT OF DEATH: A ROPE. IN FACT, IT'S YOUR LARIAT, WHICH YOU GOT TIRED OF CARRYING AROUND AND HUNG IN THE CLOSET WITH YOUR COAT.

You've been framed. And you have mere hours to discover who the real killer was. Because if you don't, you could be in serious trouble:

THE DETECTIVE GRABS YOU FIRMLY BY THE WRIST, AND WITH

A PRACTICED TWIST, SLIPS THE CUFFS ON YOU. "YOU'RE UNDER ARREST FOR THE MURDER OF VERONICA ASHCROFT." SERGEANT DUFFY APPEARS AS THOUGH OUT OF NOWHERE AND ESCORTS YOU TO THE WAITING POLICE CAR.



You communicate—and the story responds—in full sentences. Which means that at every turn you have literally thousands of alternatives. So if you decide it might be worthwhile, for example, to dance with Mrs. Ashcroft's corpse, you just say so:

>DANCE WITH VERONICA'S BODY

And the story responds:

YOU'LL HAVE TO LEAD, YOU CAN BE SURE OF THAT.

This masquerade ball is one bash where you'd better go easy at the bar. Because simply staying out of the slammer is a challenge that could send the soberest soul staggering.



Other interactive mystery stories from Infocom include The WITNESS,™ a 1930's style whodunit thriller in which a case of blackmail turns into murder before your eyes. And DEADLINE,™ which gives you just twelve hours to find the murderer, before he finds you.

You'll have to solve puzzle after puzzle as you build your case. You'll search for clues. Analyze evidence. Overhear conversations. You'll even question suspects:

>COCHRANE, TELL ME ABOUT SAMUEL OSTMANN

And the story responds:

COCHRANE IS UNSTEADY AND SWALLOWS A LITTLE MORE OF HIS DRINK BEFORE ANSWERING. "THAT SLIME! HE'LL GET WHAT'S COMING TO HIM ONE OF THESE

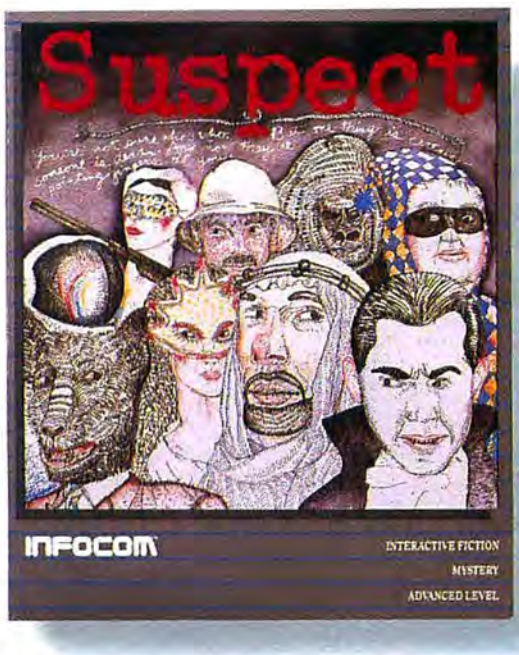
SUSPECT gives you clues even before you flip on your trusty computer. Your invitation. A cryptic note on the back of a business card. An article torn from a magazine. A receipt for your rented costume. Even a guide to proper etiquette during a murder.

DAYS. HE'S GOT AN IN WITH THE REAL ESTATE BOARD AND HE'S TIGHT WITH VERONICA. HE'S RUINING MY BUSINESS!"

And if you're clever enough, then maybe, just maybe, you'll prove your own innocence. But you'll have to hurry.

So polish up your party manners and rush down to your local software store to pick up a SUSPECT today. And remember, the costume ball lasts from 8 to 12. But if you don't solve the mystery, you'll soon be doing 18 to 20. With no parole.

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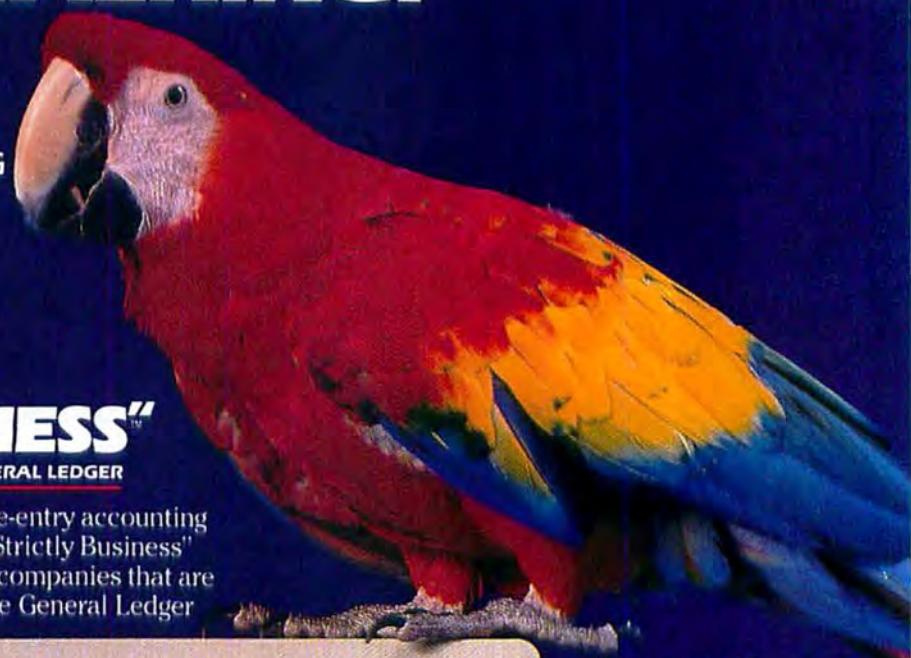
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STANFORD AND SOFTWARE

AT A RECENT MEETING OF THE Stanford Mac User's Group I found myself searching hard for a seat in a large auditorium. By the time the program began, I was surrounded by several hundred Mac users. This could easily be explained by the sheer number of machines that Apple gave to Stanford, but such an explanation could not account for the large number of non-Stanford people, like myself, at the meeting. Nor could it explain, on its own, the large attendance at Stanford's two-day MacFest.

In an era when everyone seems to be jockeying for the position of "most compatible boring workhorse," Macintosh has brought the enthusiast back to computing by sending thrills of discovery through thousands of new converts, and by providing early Apple users with a new toy. In other words, Macintosh has brought the element of "play" back to personal computing.

This was clearly evident at Stanford. At a regular meeting, Apple's own Gursharan Sidhu provided a detailed discussion of AppleTalk, focusing on the primary design considerations: low unit and system cost, and simplicity of communication protocols. Mr. Sidhu stressed that Apple has provided only the foundation of a communications network, and that the involvement of third party developers is crucial to the success of the Macintosh office and the AppleTalk network. [Note: Most observers thought Apple was crazy for letting AppleTalk out to the public without a working file server.]

MacFest featured displays by a large number of Mac hardware and software companies. The evening sessions, although held in locations that were difficult to find on the Stanford campus, at least for this newcomer, were extremely interesting. Monday night's keynote speaker was Silicon Valley guru Alan Kay, who talked a great deal about the importance of the Macintosh as a step in the development of personal computing. He made it clear that he feels there is still a long way to go, and that wholehearted attachment to any current technology is going to stunt the growth of new ideas.

Tuesday night's closing session of MacFest featured a panel question and answer session with most, if not all, of the original Mac development team in attendance. Even people like Jef Raskin, who conceived the Macintosh but no longer works for Apple, were invited by the Stanford organizers and seemed delighted to attend. Mike Murray, recently booted up to corporate as Director of Business Development, was called upon to field questions and refer them to the panelist who could best answer, or who hadn't spoken for at least twenty minutes. Mr. Murray jokingly asked the panel what questions they had, and Steve Capps responded in kind, "Is it true that the new ROMs support GEM?"

On a more serious note, Bud Tribble mentioned that the new ROMs were crucial to the operation of Apple's upcoming 20-megabyte hard disk because they incorporate a true hierarchical filing system. The 128K ROMs, or beta versions at any rate, are already in the hands of some developers.

It was interesting to see that most of the participants in the panel were so far away from the original design in their current work that they had difficulties answering some of the questions without giving away Apple secrets. Chris Espinosa was put on the spot twice—once by the audience, when asked about the future of large memory Macs, and in a pointed followup question by Mike Murray. Chris giggled and pulled himself out of the mess by asking the audience for a "wish list" of new Mac features. Color Macs, more memory, built-in hard disks, and other expected items filled the air. Chris smiled whimsically and said: "Most things that you believe are possible could come true!" Good, Chris.

The fact that Macintosh began as something of a pirate project was brought up several times, and Mike Murray was asked whether it was possible for a $2 billion company like today's Apple to continue to foster such projects. Mr. Murray said that the Mac could not have happened at today's Apple, but that the recent changes in corporate structure may help return Apple to the user-oriented kind of place that allowed creativity to flourish with Macintosh. We hope so. I can say from personal experience that the bureaucracy at Apple has grown completely out of hand.

It seems to be a bit of a concern for some of the team as well. Bill Atkinson expressed annoyance several times over delays in the development of *Paint Mover*, a tool designed to facilitate working with images larger than screen size. It came up first in response to a question about executing horizontal flips on an entire *MacPaint* document (something I've done the way Bill suggested—painstakingly manipulating little bits at a time). In fact, Bill invited anyone in the audience who felt up to the challenge to come to Apple and work on it under his supervision.

Andy Hertzfeld said he thinks GEM is a sham. After extensive study, he said, he

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felt that GEM had little or none of the depth found in the Macintosh system. "It has to be a joke," Andy concluded, "but I can't figure out who the joke is on." Rumor has it that at a recent GEM show, all the interesting talk revolved not around GEM, but instead around new developments for the Mac.

In any event, congratulations are due to the Stanford Mac Users Group (SMUG) for putting on a terrific show, and to Macintosh users for making demands that Apple and third party developers will have to try to meet.

In other areas, Macintosh developers have been concerned about a number of situations recently, including the turmoil at Apple. Although most insiders feel that Apple's restructuring will result in a leaner, more efficient company, there is an understandable nervousness attached to the process. Particularly when familiar people are shuffled to new positions inside (or outside) of the company, and telephone calls, when answered, are often not handled by the person to whom they were placed. Nevertheless, developers feel that Apple's weakest point, universally seen to be marketing, will be vastly improved with the changes. Bay Area newspapers, already filled with inflated horror stories about the collapse of the computer industry, have taken the shock approach to the situation—most everyone else is adopting a "wait and see" attitude.

Another recent concern for developers, especially smaller developers who are focusing their energies entirely on the Macintosh, was the impending release of *Jazz*. Prerelease versions were buggy and the software was late to arrive on the market. Now that *Jazz* is out, developers are breathing a collective sigh of relief. Although the communications side is still a bit buggy, the final product is generally viewed as being brilliant. The success of *Jazz* as a product was seen in the community as an important indicator of the viability of the Mac. By the way, rumor has it that the release of *Jazz* was held up primarily so that Lotus could provide the program with foolproof copy protection. Sorry, Lotus, but commercial copiers were available within two weeks of release.

Mixed reviews for the Amiga/Commodore machine and the new Atari models. Some developers are delighted with the Amiga's sound and color graphics and plan heavy development, including Tecmar which will be providing a line of peripherals. But most Mac developers feel that neither machine will be much of a threat to the Macintosh, partly because they won't be real products until the end of the year. . . .

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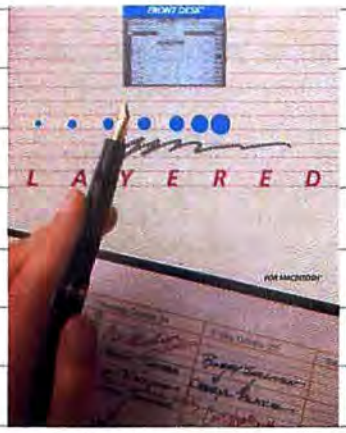
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MAC MEANS BUSINESS

THE MOTHER OF INVENTION sometimes brings her gifts in strange packages. In 1984 it was a deceivingly small computer named after a raincoat that placed a vast audience into orchestra seats in the Theater of Technology.

For practical purposes the first-edition Macintosh was not exactly a bounty. It arrived with little to offer in peripherals and barely adequate memory. Charged with introducing an overly expensive home computer, Apple retorted that the Mac was a business machine. The critics disagreed, but critics don't write software or design peripherals.

Today, the Mac is indeed a business machine. With over 500 pieces of retail software, eight major hard disk systems, extensive telecommunications, the best laser printer ever made for a microcomputer, half a megabyte of memory, a fully functional Local Area Network, file-servers and printer-servers available, the fledgling business machine has truly arrived. All serious and not-so-serious venues have been approached by the best and most respected names in software. The old question, "Will it run *1-2-3*?" has been turned around to "Too bad your PC can't run *Jazz* and *Excel*!"

Apple's Dilemma (?)

Some say the Mac was hurried to market to stave off an anticipated onslaught by the PCjr, which never materialized. Whether this is so or not is immaterial. What is germain is that a computer has created, or rather defined, a unique market.

A *Who's Who* of Mac users would read like a register that crosses all lines, social and economic. Major accounting firms have large installed bases of Macs. Peat, Marwick, Mitchell & Company uses the Mac throughout its worldwide operation; Arthur Young & Company uses them in conjunction with other computers.

• **Word Processing:** The Macintosh standard for word processing is, of course, *MacWrite*. This sturdy program has undergone an upgrade and is expected to be drastically improved late in 1985. In addition Microsoft, Living Videotext and Lotus offer quality word processing.

• **Databases:** Versatile and powerful databases such as *OverVUE 2*, *Filevision*, *1st Base*, *MacLION*, *Omnis 3* , *FactFinder*, *Excel*, *Jazz*, and *PFS:File* are available for the Mac. Some applications store text records, others use a spreadsheet type of format while some, such as Microsoft's *File*, can store both text and graphics. *Over-VUE, Helix* and *Omnis 3* are relational databases that can perform extensive sorting and mathematical functions upon stored data.

• **Spreadsheets:** *Multiplan* was once the only software available for the Mac besides *MacWrite* and *MacPaint*. Today there are quality spreadsheets such as *Quartet* from Haba Systems, *ClickOn Worksheet* from T/Maker, Paladin Software's *Crunch*, Microsoft's *Excel*, and Lotus' *Jazz*.

• **Graphics:** The standard for business graphics is Microsoft *Chart*. High quality graphics are also available from *Jazz*, *Excel*, *OverVUE 2*, *Crunch*, *ClickOn Worksheet*, *Quartet* and *Ensemble*. Creative art software is in no small supply either with outstanding products like *VideoWorks*, *Slideshow Magician*, *Mac 3D*, and *Animation Toolkit*. In addition, television interfaces like *MacVision* and *Magic* upload digitized images to the Mac as *MacPaint* images which can be enhanced and printed. *ThunderScan* is a laser scanner which replaces the ribbon in an Imagewriter and scans flat artwork rolling through the printer.

• **Communications:** Heavy duty software is now available for the Mac, such as *Smartcom II* from Hayes, *MacTerminal* from Apple, *StraightTalk* by Dow Jones and *inTouch* by Software Masters.

• **Integrated Software:** Lotus' *Jazz* is certainly the frontrunner in terms of publicity, but excellent products in this category also include *ThinkTank 512*, *OverVUE 2*, *Excel* and *Ensemble*.

• **Data Storage:** 3.5" diskettes pile up fast in a working Macintosh Office. At least eight manufacturers offer hard disks and file and disk servers for the Mac ranging in size from 5-megabytes (5,000K) to 368-megabytes (0.37 gigabytes). Some of the outstanding units are *HyperDrive* from General Computer, *MacDrive* by Tecmar, Micro-Design's *Keeper*, *MacBottom* from PCPC, the *Bernoulli Box* from IOmega and Corvus' *OmniDrive*. Apple computer is expected to announce a 20-megabyte hard disk this fall.

Shared Resources

By linking computers together in Local Area Networks, resources such as the LaserWriter, modems and storage devices can be utilized for organized work groups to conserve time and money. This is the concept behind the Macintosh Office. Multi-user software like *WOSbase* and *Omnis 3* can become part of a design-as-you-go network. File servers allow data and applications to be archived and retrieved from anywhere on the network. Passwords afford security for special tasks within a work group. Virtually any software stored in a file server can be part of the electronic library of resources.

What are we coming to?

For business, the precision and organization that computers offer is brought right into the 1980s with the Macintosh. The Mac has grown up into a truly formidable system that offers dividends in even its simplest configuration. It has a long technological life ahead of it —computers-to-come from Apple will be upwardly compatible with the 128K Mac introduced in January 1984.

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SOFTWARE ISN'T FRAGILE

WHAT IS SOFTWARE WORTH?

That's too difficult a question. Let's make it simpler: what's *ExperLisp* worth?

ExperLisp is the first Lisp available for Macintosh. At present, it's the only Lisp available for Macintosh. It costs $495.

And it is incredibly buggy. Extraordinarily buggy. Even for Macintosh. Which is saying a lot.

Are we done? Have we answered the question?

No. *ExperLisp* may, indeed, be worth $495. Well, a couple hundred bucks, anyway.

Here's some background. *ExperLisp* is marketed by ExperTelligence, a software firm that previously brought out *ExperLogo*. *ExperLogo* is a version of Logo with a few twists; three dimensional "bunnies," for example. (Other Logos call them "turtles"; *ExperLogo* calls them bunnies to denote their speed. Cute, huh?)

The Logo programming language is an offshoot of Lisp. In this case, *ExperLogo* was a stalking horse for ExperTelligence's main product: *ExperLisp*. The intention was (and is) this: to provide a full-bore version of Lisp for Macintosh program developers.

Not Pascal, not Forth, not assembler, not even the ubiquitous C. Lisp. Can you believe it?

The nerve.

Time to admit my bias: I love Lisp. I'm not fond of lock-step Pascal or bit-twiddling lock-step C. Both languages are virtual machines that require programmers to become machine-like in their thinking. It's the Industrial Revolution all over again: machines that require people to become machine-like to operate the machines.

No thanks.

Lisp, like Smalltalk and Prolog, is a higher-level language than Pascal or C. (It's also a lower-level language; sorry, but Lisp is like that.) Lisp is like modeling clay: the language is composed of "primitives." Here's a primitive: Plus. The primitive "Plus" might be found in this line:

(Plus 3 7)

which would evaluate to 10. We could stick that Lispish phrase inside another primitive like this:

(Sub1 (Plus 3 7))

and get back 9. It goes on and on and on. Primitives within other primitives. Functions inside functions. The word "Lisp" comes from "list programming language" and it does, indeed, excel at manipulating lists: reversing lists, extracting or changing the contents of lists, adding lists to other lists, and so on.

With Lisp, you start with a handful of predefined words and operators, then proceed to "grow your own language," merrily creating new functions, structures and what-not.

And, if you're like me, you don't have the slightest idea what you're doing. You learn as you go. The clay becomes more malleable as you work it into ever more delightful shapes. The insights multiply.

Lisp has come lately to microcomputers. The reason is that Lisp is a memory hog. Other languages let you write programs. Lisp lets you create worlds: vast nets of interconnected structures and routines. This takes a lot of memory. *ExperLisp* won't deign to sniff at 128K machines. Ideally, you'd have four megabytes or so to romp in.

Is *ExperLisp* interpreted or compiled? Ah! A good question. *ExperLisp*, in its own unique Lispish way, isn't either.

It's tough to explain. With Lisp, you can go two ways. One way is this: enter a line, hit return, and have the line instantly evaluated. In this respect, it's similar to Basic's "command mode." The other way is to enter a program, select it, then have it "compiled" and run (or compiled and not run, depending on how you write the program).

ExperLisp uses a "Listener Window" for immediate evaluation, and "Edit Buffers" for leisurely program creation. *ExperLisp* is awash in windows; there's also a Graphics Window and multiple Edit Buffers are possible.

At the heart of all this is the *ExperLisp* compiler, a compiler with an interesting quality: it won't allow creation of stand-alone programs!

In other words, you can't run the programs you write unless the *ExperLisp* compiler is also present. At present, "clickable applications" can't be created with *ExperLisp*. So much for commercial program development. At the moment.

Now for crashes. *ExperLisp* gaily crashes in varied ways. The version I've got is 1.02, the second commercial release of the language. This is not beta software. This is what you get when you pay four-hundred-and-ninety-five dollars!

$495. It crashes and crashes and crashes. Even ExperTelligence admits that the language is "fragile." What a great word. What a great connotation: if it breaks, it's your fault! After all, it's "fragile."

"Hey, Buddy, watch it! It's fragile, you gorilla! Jeez!"

Software isn't fragile. Crystal and soap bubbles and hope and butterflies are fragile. If software doesn't work, it's not fragile, it's flawed.

ExperLisp version 1.02 is flawed. But it's still wonderful.

In its present condition, *ExperLisp* is, at times, execrable. But let's be honest: everything crashes at one time or another. Everything I use on a regular basis crashes every so often. *MacPaint* is the only exception. I don't think *MacPaint* has ever crashed for me (Thank you, Bill).

ExperLisp is just worse, that's all. But it's still wonderful.

The best analogy is *Zork*. In *Zork*, you wander around trying to figure things out and dying frequently. *ExperLisp* is no different. You try to figure things out and die frequently.

It's worth the struggle. The language is rich in predefined functions, primitives

(continued on page 149)

ROBERT PIZZO

QUICK CLICKS

What's new, what's classic, what's happening in the world of the Macintosh? We'll try to keep you up to date with our monthly Quick Clicks.

HEAPSHOW

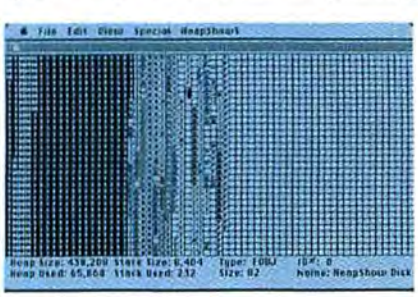
List price: $49.95. Requires 128K. Published by B/T Computing Corporation, PO Box 1465, Euless, TX 76039. (817) 267-1415.

HEAPSHOW IS A DEVELOPER'S UTILITY IN DESK accessory form. It is a tool that not only lets you look at the Mac's memory, but also lets you watch it change as an application runs. My first thoughts were that this product was simply an enhanced version of the old Uriah Heap desk accessory that came out of Apple last year. Couldn't have been wronger.

HeapShow installs like any other desk accessory (with Font/DA Mover). To use it you launch an application or select some action in an application and then select HeapShow. You'll get both a full-screen display (that extends far off the the right of the screen) and a new menu with several options. Starting at the left side of the display you'll see lots of tiny boxes with letters or numbers in them. Each box represents a 64-byte chunk of memory and the letter (or number) and color tells you roughly what is is and whether it is locked, relocatable or purgeable. As the application runs you'll see the display refreshed and updated every five seconds. If you want more information about any of the resources or non-resource memory blocks you simply double-click on it and details appear at the lower right of the display. These features are more than useful; I found it fascinating to watch my Mac swap resources and data in and out as required.

HeapShow can teach anyone—not just programmers—a lot about how the Mac actually works. For example, you can watch what *MacTerminal* does with memory and see why it behaves as it does. You can see if the program you are peeking into uses memory efficiently and you can often see problems brewing.

HeapShow shows up in the Apple menu in two versions: A and S. The two are identical except that when you run A it loads, as do virtually all other desk accessories, into the application heap, while S loads into the system heap, where it is less in the way when it is showing you a working application. There are occasional problems caused by a having a DA in the system heap, but they are well covered in the manual.



Aside from the documented warnings I had no trouble with this program and failed to crash it—to my surprise (and I really tried).

If you are a programmer, customizing HeapShow is reasonably easy. The manual presents MDS 68000 assembly language and Lisa Pascal versions of some simple add-on routines.

Future enhancements that will make HeapShow far powerful than it already is are promised.

This program should certainly be in all developer's toolkits. The rest of us can also get a lot out of it. It is particularly useful for those just starting to program the Mac.—*SB*

MY OFFICE

List price: $129.95. Requires 128K. Second drive and printer recommended. Published by DataPak Software, 14011 Ventura Boulevard, Sherman Oaks, CA 91423. (818) 905-6419.

MY OFFICE IS AN INTUITIVE OFFICE MANAGEMENT program that works pretty much the way you managed an office before you ever had a computer. It will easily replace a paper-based filing system for reports you generate or receive electronically. Unlike many personal desk programs this program does not intrude in areas such as appointment books and random notes that many people prefer to keep on paper and handy.

The basic files resemble a three-drawer file cabinet. You pull out each drawer to access its unlimited number of file folders. Each file folder can hold as many documents as you have room for on the disk. You can easily see what is in each folder and access any item. This part of the program is well designed and works efficiently.

Once you have selected a document you can work on it using the built-in word processor. The word processor is similar to *MacWrite*, although your documents are limited to single pages. This is a drawback if you add material to an already full page. You will now have to manually repaginate the remainder of the document.

My Office has a powerful design function that lets you create forms of all sorts and store them in a stationery stock. Your forms can include graphics, rules and calculation fields. Forms are easy to create and easy to fill in with the word processor.

Printing your documents couldn't be easier. Simply drag them *through* the Copier icon and you are presented with a full range of choices in a dialog box. You can also select



data from the folder headers and print lists, mailing labels and envelopes. The data selection criteria are extensive and should be adequate for all purposes. The merging works well and is quick.

Built-in utilities let you free up space in your working file by automatically moving all documents older than any age you select to an Archive file. An indexing utility lets the user easily and quickly explore the contents of entire files. This ability becomes crucial as your files grow large.

While this is certainly among the very best office management programs it suffers from two major flaws—the first common to virtually all programs of this type. These programs totally tie up your Mac; you can't do much else while they are running. Since they are all big and want to use a lot of memory even using *Switcher* doesn't help much. If you use your Mac mostly for what the program does (and it is a lot) then *My Office* can be your best friend, if not you'll do a lot of disk changing.

The other flaw is the copy protection. The particular copy protection used forces you to run the program off the master disk inserted in the internal drive. This was not documented and attempts to run off both a hard disk and an external drive caused system crashes.—*SB*

MACLABELER

List Price: $49.95. Published by IDEAFORM, INC. P.O. Box 1540, Fairfield, IA 52556.

IF A DISORGANIZED DISK LIBRARY IS GETTING YOU DOWN, this convenient labeler/index program could be just the thing to establish order among the chaos. *MacLabeler* comes with everything a Mac user needs to produce individualized labels and indexes for every disk in a burgeoning collection.

As soon as the disk is booted, the program launches itself, ejects the master disk and asks the user to insert the disk to be labeled or indexed. Once it's in the drive, *MacLabeler* automatically reads all the file and folder names off any disk, displaying the names of all folders and

files found in a label-sized directory on the right side of the screen. The user can simply transfer the entire index to the master label box on the left, or choose individual items to be listed, transferring the names over one at a time. Another option allows for transfer of only file names or only folder names.

Each label has room for up to 20 file or folder names, printed in 9 point Geneva, plus a larger, boldface disk title. Users can select from a number of different decorative borders, which can be used to code disks of various types. The labels can be printed either exactly as they appear on-screen, or flipped upside down, to accommodate different methods of disk filing.

Any disk can be read and labeled — as long as there's at least one folder on it. If you have some problems getting *MacLabeler* to read a particular disk, put an empty folder on it in desktop mode and try again.



A directory option prints out a complete listing on regular paper of what's on disk, what kind of document it is, when it was created, and when it was modified, sorted alphabetically by folder. Files outside of folders are printed before files in folders. The header shows the disk name, how much memory is already used on the disk, and how much memory is still available for use. The hard copy is printed in the Imagewriter's draft mode.

MacLabeler comes packaged with enough stick-on labels for dozens of disks. The enclosed labels are long enough to print three different disk labels on each. All you need is a pair of scissors to trim each individual label down to its proper size.—*TFH*

MACMUSCLE

List Price: $89.95. Requires 128K or 512K with printer. Published by Tech 2000 Software, Inc., 263 Lugonia Street, Newport Beach, CA 92663. (714) 650-7240.

USING YOUR MAC TO BRING YOU THE STATE-OF-THE-ART IN physical conditioning in an era of fitness awareness is a good and innovative idea but *MacMuscle* doesn't have the strength to pull it off.

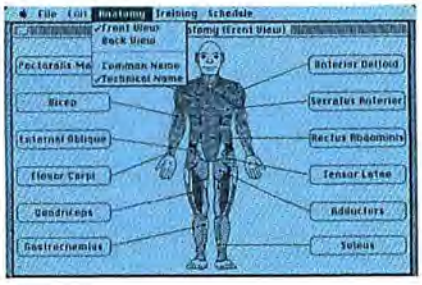
MacMuscle's on-screen helps feature diagrams of the human body, front and rear views, with a listing of the 24 major muscles (in both their technical and common names). These selections are on the Anatomy Menu.

Click a muscle from the 24 muscle groups and definitions and references as to what sports will develop that chosen muscle are shown in a dialog box. When the selection of a muscle group is made, a menu of exercises appears on-screen, from which users select preferences.

One excellent feature in *MacMuscle* is that home exercisers can visually see the selected exercise demonstrated by an animated figure. Unfortunately, only the primary exercise for each muscle group is animated. As an exercise enthusiast, I'd hesitate to attempt any exercises that I have not visually seen done, because of the number of injuries caused by improper execution. In all other exercises following the primary one, *MacMuscle* tries to compensate for its lack of animation by including a step-by-step text description of how an exercise is to be done. A combination of both the animation and text description for execution of an exercise would lead to a better program.

MacMuscle places great emphasis on the weight-oriented exercises that appear on the exercise menu. This philosophy may limit the product to a weight training audience.

A customized workout schedule may be developed to help keep track of your progress. Since *MacMuscle* follows the Mac interface faithfully, it is easy to set up a schedule. The schedule enables you to design a workout program that's best for you, based on your day of preference and the level of fitness you think you fall under. There's also a place on the schedule for logging weight, amount or distance, if the exercise requires it. The number of sets for each exercise is determined by the level of fitness that is entered on the workout preference window. Other than having at hand the ability to have a schedule of your progress, you could just as easily do this with paper and pen.



MacMuscle calculates your ideal pulse rate range based on your age and fitness level. An animated heart coupled with audio effects demonstrates the pulse rate at the entered speed. This is meant for the aerobic portion of a workout, of which there are (unfortunately) very few included on the exercise menu.

A major fault with *MacMuscle* is that the program does not allow for the differences between the female's and male's abilities in muscle strength. This difference must be taken into account if both women and men are to use this program. An option for females is only considered on a list of desirable weights for men and women based on height and body frame. The inclusion of this list is pointless, since it's not appropriate for *MacMuscle's* target audience.

Overall, *MacMuscle* is a good attempt, but contains nothing you can't do without. Save your money and invest it towards a membership at a health club, where you can get a "real (and safer!) workout." — *DG*

PERSONAL ACCOUNTANT

List Price: $89.95. Published by SoftSync, Inc., 162 Madison Avenue, New York, NY 10016.

PERSONAL ACCOUNTANT IS TARGETED FOR BOTH HOME and business use. Making full use of the Mac's graphic interface, it plugs a gap in the current Macintosh library.

Computerists who've never used a Mac before can set up accounts, complete with entries, an hour after booting up the disk. Mac pros will feel at home in much less time.

The documentation follows Apple's "less is better" lead. A mere 32 pages clearly and comprehensively covers every functional aspect of the program. More ancillary information, such as a list of built-in accounts, would have been nice. A few typos managed to sneak past the proofreader; but once again, these miscues are nothing more than minor irritants. Unlike other "shorty" manuals, *Personal Accountant* offers a comprehensive Table of Contents.

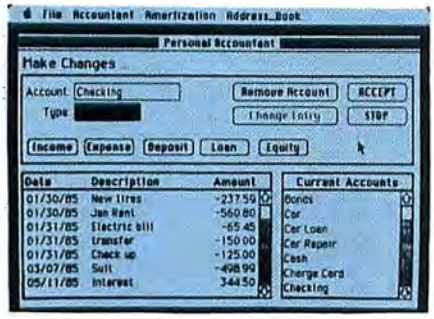
The program was designed with the financial neophyte in mind. Users fill in the blanks following the on-screen prompts. All commands are clearly designated, making their purpose easy to comprehend.

Step-by-step instructions for opening accounts, entering data and generating reports can be found in the user's guide. Be on the lookout, though, as some commands aren't listed in the manual in the same way they appear in-screen ("erase" and "delete," for example, are the same function).

Personal Accountant leaves 125K available for data storage. If that's not enough, the program supports an external drive. Most households and small businesses should find this capacity adequate, but if not, simply transfer the excess to another data disk.

All activity takes place within four pull-down menus. "File" permits paper size selection, paper orientation, and related formatting functions. The "Accountant" menu is the heavyweight. This is where accounts and entries are made, where they're edited and reviewed, and where the reports are generated. "Amortization" calculates loan payments and forecasts the future value of IRAs, savings accounts and other assets. "Address book" is a database designed to store addresses and related account information. It sports a relatively powerful search and sort capability.

Among the 13 built-in accounts are Car Repair, Cash, Charge Card, Checking, Clothing, and Entertainment. Others include Medical, Savings, Food, Rent and Utilities. Of course, you can add your own items to this list at any time.



Because accounts are set according to type, the program automatically double-posts each transaction. As long as you properly increase or decrease the first transaction account, the computer will properly post the other one.

For itemizers, a handy tax deduction flag has been included. Before entering a transaction, activate the tax flag for full or partial transaction value. When the report is generated at tax time, all flagged amounts will be processed. No more April 14th calculator crunch!

Reports such as Profit/Loss Statements, Trial Balance Sheets, Asset/Liability, and Detailed Expense Reports can be viewed on-screen or sent to a printer. Straight text or text with graphic displays are produced with equal ease.

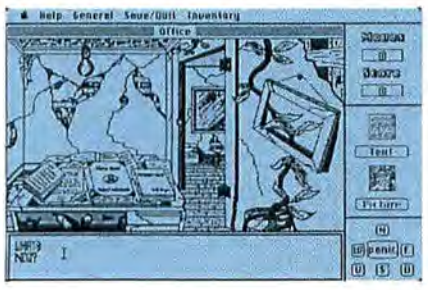
Personal Accountant is a real handholder with exceptional error-handling capabilities. It fulfulls household needs admirably, and while it won't replace your own accountant, it is adequate for some small businesses' needs.—*Ted Salamone*

GATEWAY

List Price: $49.95. Published by Pryority Software, Inc., P.O. Box 221959, Carmel, CA 93922.

THIS ILLUSTRATED TEXT ADVENTURE GAME CASTS the player as sole heir to an eccentric uncle's entire estate—which consists, for the most part, of a broken-down storefront, some useless antiques, and a mysterious journal hinting at a gateway to another world.

Although it's translated from the old user-*unfriendly* computer systems, Pryority has done a fairly good job of adapting *Gateway* to the Mac's way of doing things. Movement can be accomplished either by typing in the first letter of the direction (U for up, N for North) or by clicking the mouse over the corresponding letter on a small compass in a corner of the screen. A special Panic Button in the middle of the compass saves the game in progress and puts a non-functioning spreadsheet up on the screen, in case your boss walks in. Pull-down windows are used to save or restore the game, inventory items, check on your character's condition, or access the on-line Help feature.



The Help feature is a boon to novice and veteran Macventurers alike. A dialog box lets the player mark the part of the game giving trouble, then request subtle, not-so-subtle, or outright answer hints. Just accessing the Hint box costs a point each time, and hints cost from ten to thirty points apiece, depending on their difficulty. Still, it's nice to have everything you'll need in one package, without having to shell out more money—or break down and call the company—to sidestep a seemingly-impossible situation.

The game is played by typing sentences like OPEN DOOR in with the keyboard, with the computer printing out its response on the screen. Nicely drawn, high-resolution pictures illustrate key points in the game.

The disk is packaged with several items of interest: a letter from Uncle Bertrand's lawyer, a note from Bertrand himself (with intentional "water damage" obscuring key information), a well-documented instruction book and three color illustrations. Don't lose these pictures, since they contain key visual information not contained in the game's text. Without carefully looking at the picture called "South Basement," for example, you'll never find the gateway, no matter how often you "look" or "examine."

The text in *Gateway* is rich and humorous, although the solutions to some puzzles suspend logic so completely that it's almost impossible to solve the adventure with getting at least a few hints. Still, it's better than the average illustrated adventure in terms of both text and graphics. If you like adventure games, this one will draw you in—if for no other reason than to find out the secret of the castle on the lake.—*TFH*

GYPSY

List Price: $39.95 (Includes Mouse Mover). Published by Magnum Software, 21115 Devonshire St., Suite 337, Chatsworth, CA 91311. (818) 700-0510.



THE SHADOWS FLICKERED DIMLY ON THE WALL AS RED AND black candles first flamed and then dimmed in response to the movements of the circled dancers. The light glinted from upraised ceremonial daggers as the High Priestess saluted the Old Gods and the candles were put out one after the other.

But even as the last candle died away, a dim, blue light suffused the room, prefaced by a supernatural beeping noise.

Moving to the Macintosh, the High Priestess placed the *Gypsy* disk into the drive and, while waiting for the program to boot, moved the mouse atop a pressboard surface. A eldritch whirring noise was heard.

"Hey, what happened to my mouse?" the High Priestess asked, turning her Mac's rodent upside down and frowning at the strange attachment she found there.

"It's OK, My Lady," one of the members quickly assured her, "it's called the Mouse Mover. With your permission, I'll show you," and so saying he took the mouse from the priestess and turned it so all could see.

"Each of these three metal globes floats on 33 ball bearings." He spun one with his finger and it made a distinct whirr. "On most surfaces the mouse moves a bit smoother," he explained, "although noisier. On the special board that's packed with the *Gypsy* program it really glides along." He handed the mouse back to the priestess.

But she was interrupted by gasps of astonishment as *Gypsy's* title screen appeared. A crystal ball flashed images of a moon, a lady, symbols from Solomon's time and more. But when the man who had explained the mouse reached forward to hit the space bar and the screen cleared again the people crowded about began talking all at once. Only a quick gesture from the High Priestess restored enough order that she could speak to question the adept who had brought the program.

"A Ouija!" she exclaimed, "but the stars—they move and dance. It is a beautiful sight."

"Yes, my lady," the man said, "but this is just one of many board designs possible." So saying, he moused to the menu bar and with a few quick clicks cleared the on-screen representation of a standard Ouija-style board to one of a different design. Instead of numbers and letters arrayed circularly on a textured surface, the new board was a moonscape with the letters and numbers hanging above the cratered surface.

"Ummmm," the High Priestess reached over and slowly moved the mouse back and forth on the pressboard. The on-screen cursor echoed the movement. As the cursor touched a letter, a soft beep was heard and the letter was added to a line of text at the bottom of the screen. "I prefer the first board," she said.

"No problem," the man said, and the first board was quickly restored. "In fact," he added, "you can design your own boards from scratch with *MacPaint*. Or you can take any of the boards designs included. Then you can place the letters and numbers where you want them, visibly or invisibly. Indeed you can design your own pointer—it comes with moon-shaped pointers, a star of Solomon and more. You can even change the pattern of the dancing stars."

"Yes, yes," the High Priestess seemed entranced. She took the mouse from the man and motioned to a few of the other people clustered about. One by one their fingertips joined their priestess' on the modified mouse. Slowly, with only the faintest of whirrs, the mouse began to move about the board and the on-screen cursor began to pick out letter after letter.

"It also," the man said, "does automatic writing and..." but the outraged whispers to be quiet cut him off.

"Have you a question?" the High Priestess asked. The light from the Mac shimmered, illuminating her high-boned face. An eerie cold gripped the room. The curtains moved slowly, although there was no breeze.

"Well, uh," the man stammered, "do you think you could ask how a new Macintosh magazine will do . . . ?"—*NLS*

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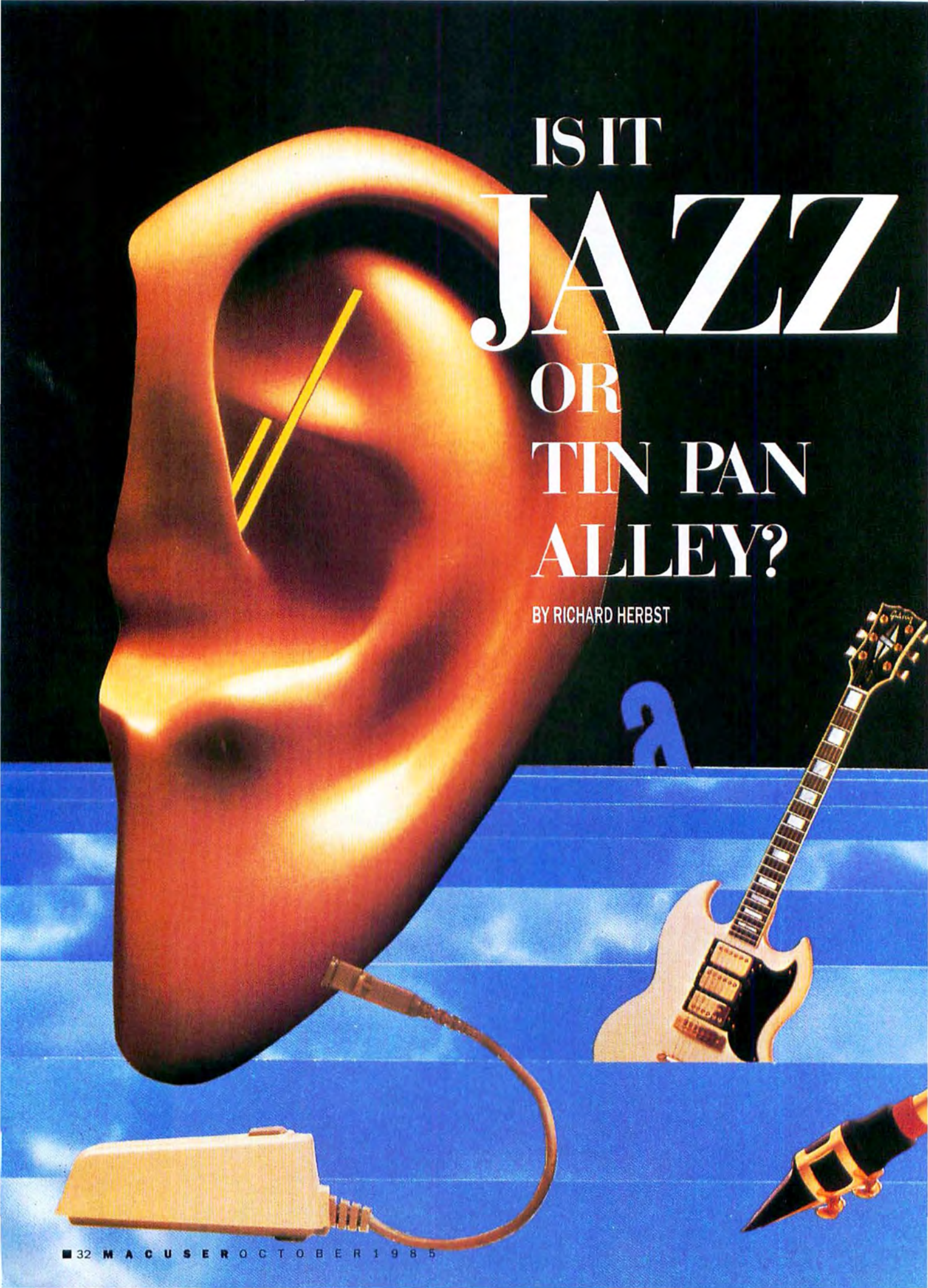
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IS IT JAZZ OR TIN PAN ALLEY?

BY RICHARD HERBST



Power users take notice: There's a Mac at the door with a Lotus in its hand.

Jazz, *n* [*from Creole patois jass, sexual term applied to the Congo dances (New Orleans)*].

1. a kind of music, originally improvised but now also arranged, characterized by syncopation, rubato, heavily accented 4/4 time, melodic variations and unusual tonal effects on the saxophone, clarinet, trumpet, trombone, etc.

LOTUS AND MICROSOFT ARE APproaching the Macintosh from very different directions with two very powerful products. Lotus' *Jazz* is a fully integrated system that offers a strong worksheet, word processing, graphics, a versatile database and a communications program. *Jazz* offers a complete work environment, while Microsoft takes a more specialized tool approach. Both are going to be around for a long time and both will take good advantage of greater memory when Apple decides it is time to offer it.

Without question, *Jazz* places the Macintosh in a league with, or even a



LOU BEACH

IS IT JAZZ OR TIN PAN ALLEY

as ASCII or files. They arrive unformatted in 9-point Monaco.

Hotview

The real star of the word processing show is HotView. Open up to eight graphs, spreadsheets or databases and click Include from the HotView menu at any designated text insertion point. Each of the windows on screen is accessible by clicking on it or by making a menu selection under Window.

Freezing a HotView saves that version in your word-processing document. That particular worksheet is no longer linked to the worksheet document it originated from; changes made to the worksheet will reflect only in subsequent HotViews. *Jazz* will also print form leters and various sized mailing labels from selected worksheet or database ranges. The Print Merge feature is very easy to set up. Any number of variable fields can be included in form letters.

Database

The *Jazz* database is structured like a worksheet—in columnar format with field names as column heads. A record can have up to 100 fields of 254 characters each. The default size of each field is 10 characters but, as in the worksheet, an entry that runs over the initial set length is still stored and is displayed as part of the field value followed by ellipses (. . .). File names are set from a special text entry dialog box and can contain up to 15 text characters including word spaces. Editing data is similar to editing worksheet cells. A highlighted field appears in an entry box.

Field attributes can be changed at any time, fields added and field widths changed. Attached to the database module is a forms generator that can use any data stored in the database or worksheet.

The *Jazz* database is somewhat limited in its range of sorting capabilities and search facilities.

Communications

It seems obvious that the Lotus people took advantage of Apple's *MacTerminal* source code offer and license. (It costs a mere $2500.) There are great similarities between the two programs. This means that auto redial, auto logon and macros of any sort are not supported. The module seems to reflect Lotus corporate policy rather than a desire to extend their communications to the world. It is most efficient at transferring *Jazz* files to *Jazz*.

The module does plain ASCII captures reasonably effectively but lacks an adequate screen buffer. What this means is that if you stop (XOFF) while Convert desk accessory, which only works efficiently when converting to Lotus *1-2-3* or *Symphony* files. It does not appear to handle Microsoft SYLK files (as it claims to).

Documentation

The basic *Jazz* Handbook is 351 pages. The same manual for an MS-DOS equivalent could easily be twice that size. It is organized by application with references to future or previous sections to avoid repetition. A Quic[k]-Reference manual of illustrated application procedures, queries and functions is provided as a free-standing flipcard addition to the work area, and a *Jazz* Primer walks the first-time user through samples of the five applications including examples of ways to use the applications together.

The graphics section of the manual does not cover all contingencies related to applying worksheet values to a graph. Instead, the reader is advised that a thorough knowledge of worksheets is essential to producing graphs. Similarly, the chapter devoted to functions assumes a basic understanding of boolean logic without which this substantial resource cannot be really used. No fault can be found with Lotus for not providing a tutorial on disk—for an experienced user that would be space wasted. But the real beauty of *Jazz* is that it cuts away so much of the procedure required in MS-DOS programs and fosters an unusually keen appetite for learning in persons who would, but for the Mac, have managed to avoid spreadsheets for the rest of their lives. Elaboration on expanded use of the basic applications is not a feature of the manual and this appetite will have to be sated by referring to third party publishers of *Jazz* manuals

What doesn't it have?

This is not so much a wish list as it is an enumeration of specific limitations. *Jazz* does not at this time have macro capabilities, and considering the power available through the 100 formula functions this is a serious deficiency that is likely to be remedied. There are a good many advanced functions here that are not available with *1-2-3*.

The Worksheet labors under the serious physical handicap of not providing windows. This should be considered more than just a value-added feature. It is essential when working on a large scale.

The graphics provided don't have the finished quality of Microsoft's *Chart*. *Jazz* can,, however, import graphics from the clipboard in the somewhat roundabout manner described previously. However, little room would be left on the program disk if *MacPaint* were installed.

Missing in *Jazz*, as well as in every other Macintosh word processing program, is a spelling checker. A feature found in *MacWrite* 4.5 is a much needed page search. "Go to page xx" would be invaluable when working in large

(continued on page 147)

JAZZ: REPORT CARD

Follows Mac Interface:	****
Printed Documentation:	***
On-Screen Help:	*
Performance:	***
Support:	****
Consumer Value:	***

Comments: Five extremely well integrated software modules. No on-screen help.
Best Feature: HotView software module interface.
Worst Feature: Import/export of data

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EXCEL:

By Neil Shapiro

Spreadsheets, charting and database; is this new product good enough to be called excellent?



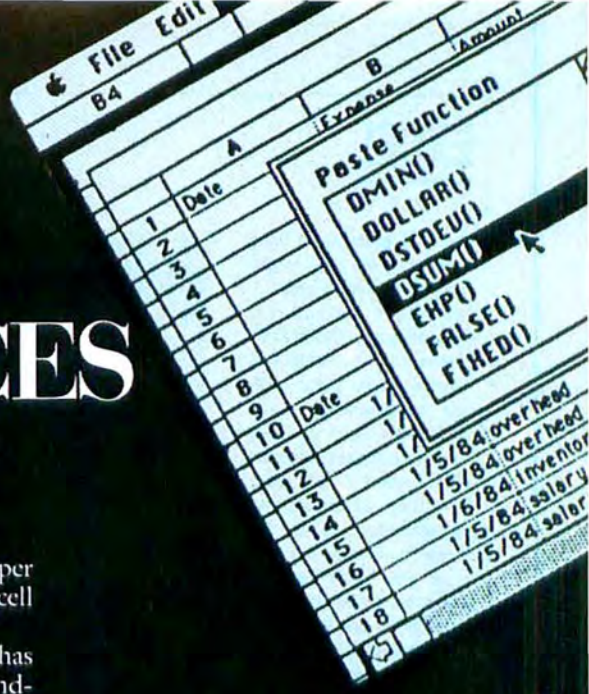






LOU BEACH

THE WIDE OPEN SPACES



POWER USERS TAKE NOTE: The Macintosh computer is now the best choice available for spreadsheet sharpshooters. Microsoft's new *Excel* takes the prize for the most powerful spreadsheet around and offers capabilities hardly ever dreamed of before, including a fully-integrated and full featured charting package as well as many database functions. *Excel* is the Uzi submachine gun of the business world, but it's going to take some effort to learn how to aim it properly.

On the Face of It

When you first boot *Excel* the sheer size of the spreadsheet gives you the feeling of wide open spaces. 16,384 rows are numbered sequentially from top to bottom and 256 columns go from A, around the alphabet eight times, to IV. So the cell in the upper lefthand position is termed A1 (the cell where row 1 crosses column A).

But if you're one of those who has cut your teeth on the other row-and-column style of labelling a spreadsheet then *Excel* won't force you to learn new tricks. The choice labeled R1C1 in the Option menu kills the alphabetic labels in the columns and replaces them with the numerals from 1 to 256. In this style, the upper lefthand cell is referred to as R1C1 (cell where row 1 crosses column 1).

Of course, don't count on using all 4,194,304 cells unless you've managed to modify your Mac far beyond the minimum 512K of internal memory that *Excel* requires to run. *Excel* has just about the same capacity as any other Mac spreadsheet in the number of cells that may be utilized (around 4,000 is a

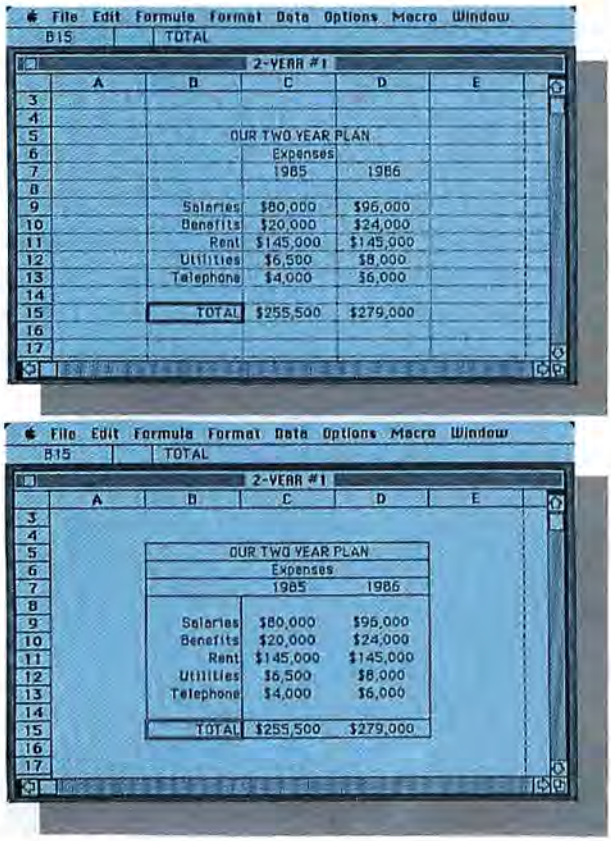


Fig. 1: A gridwork of lines delineating the cells where rows and columns cross is the usual method for presenting a spreadsheet on screen (top). But while this method makes preparation and understanding of the sheet easy, it is not very attractive. The same spreadsheet, given *Excel*'s text-formatting commands can be presented as an on-screen form complete with rules and boxes (botton). The effect is achieved by selectively turning borders of individual cells on or off. Fonts and typesizes may also be changed to further enhance the screen or the printout.

typical figure). Still, the size is not wasted. The terrain of possible locations may be utilized in a manner that allows the positioning of information to be part of the total formatting, but more on that when we come to *Excel*'s artistic and informative formatting commands.

When it comes to using the Macintosh interface, *Excel* is a direct and evolved descendent of its venerable ancestor *Multiplan*. Like that earlier program, it will convince any power user of spreadsheets to move from any other computer system to the Mac.

Most spreadsheets demand that their user be familiar enough with such labeling to select cell D4 and then to type the formula C4 – B4. With *Excel*, the computer does the work of figuring the exact formula. The user first selects the cell to contain the formula (D4 in our example), types an equal sign to alert *Excel* that a formula is about to be entered, and then uses the mouse to point to the cells that will be manipulated by the upcoming formula.

In our example, the user points to the item cost, clicks the mouse, and the cell label B4 appears in the editing line. Then the user hits the minus sign, moves the mouse to the selling price, clicks, and C4 appears automatically. Simply hitting return results in the formula being entered and the result being displayed.

As formulas become more and more complex, as the template (the collection of formulas on the spreadsheet) becomes more intertwined from cell to cell, the mousability of being able to point to cells quickly makes for far less errors than having to keyboard.

And if the above method isn't easy enough, *Excel* also allows for cells to be named. Choose C4, in our example, and then go to the Formula menu to name it "selling price." At that point the name "selling price" is entered into the list of named cells. At any time the list of names can be called onto the screen and a name chosen with the mouse—and pasted into a formula.

Various worksheets may be open on-screen at the same time and each of the spreadsheets can be split into two sections.

Other functions, such as going directly to a cell, cutting and pasting information from one area to another, or copying repetitive information or formulas are also supported via the Macintosh interface.

People may have used spreadsheets before the Macintosh. But *Excel* certainly demonstrates that the Mac is now state-of-the-spreadsheet for data entry.

Click on a cell and the editing line is ready for the entry of data into the now-highlighted cell. As numerical or alphabetic data is typed in, a box with an "X" in it, called the "cancel box," and another with a checkmark "√", called the "enter box," appear to the left of the editing line. If the cancel box is clicked the entire line being typed vanishes and you can start over again—or click on the enter box to accept the data.

Almost every Mac owner will instantly realize that to select a group of cells, the mouse needs be positioned at one corner of the group, clicked and dragged to the opposite corner, or simply dragged down or across to select segments of rows and columns. Entire rows and columns may be chosen at one time by clicking and dragging the appropriate column and row labels.

Column width is also mouse-controlled. If you type an entry that is just too long for a column to hold, it will overflow into the next column(s). But widening the column to hold such an entry (up to 256 characters) is a simple matter. Just mouse to the column's border line, click on the line to pick it up, and drag the column to the appropriate width. Or select the dialog box available from the "Column Width" choice in the Format menu that allows a new default width to be set for all columns. This juxtaposition of mousing and keyboarding, each where they are the most appropriate, shows that *Excel*'s designers understood how people relate to the Mac ergonomically. *Excel* seldom ties you down to either keyboard or mouse but allows you to choose which form of entry is most personally comfortable.

Building formulas, relating the various individual cells of a spreadsheet one to each other, is quick and easy. As a simple example we'll assume that the cost of an item is in cell B4. One cell to the right, in C4, is the selling price of the item. The profit is to be automatically computed and shown in

the next cell over, cell D4.

Functionally Sound

Above we showed a simple example of how to subtract one cell from another. In our resulting formula of C4 – B4 the minus sign (–) is called an operator. It does one calculation, subtraction. A function is an operator that does a variety of calculations when it is entered into a formula.

Many of *Excel*'s built-in functions will prove very handy. The 85 functions appear in a list box that may be scrolled. When a function is needed, double-clicking on it will add it to the formula in the editing line.

Each function consists of the function's name and a set of parentheses. It is up to the user to place the arguments of the function—the cells that the function will operate on — between the parentheses.

Clicking on the "SUM()" choice in the list box places the function SUM() in the editing line. As might be expected, this function will sum a range of cells. Let's say that there are six cells that are all in one column that must be summed together with each other and another cell two columns over. Let's further stipulate the six cells are B4, B5, B6, B7, B8 and B9 and that last cell is D8. Here's what would happen:

The SUM() function is in the editing line. The mouse is moved and clicked on B4 and then dragged to B9. The editing line now reads: SUM(B4:B9). Finally the mouse is moved again to D8 and clicked. The final result in the editing line is SUM(B4:B9 + D8). The colon (:) between B4 and B9 shows that the range of cells has been selected and will be summed with D8.

The functions cover various categories. There are functions that cover mathematics, statistics, databasing, trigonometry, boolean logic, text, finance, dates and more.

One of the main keys to using *Excel*, to using almost any powerful spreadsheet, is to become familiar with all of the functions available even if you never think they will be utilized. In many ways, it's like learning a new language.

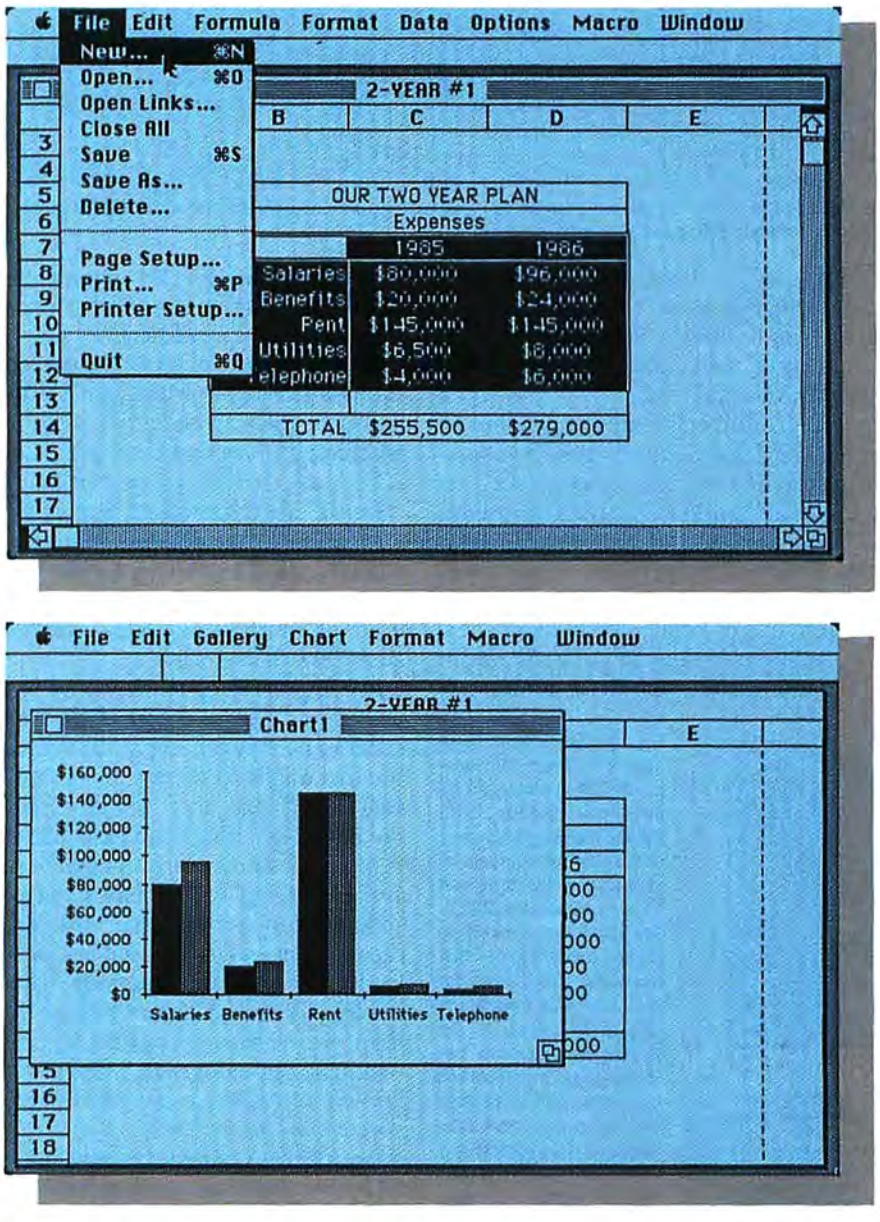


Fig. 2: Charting your spreadsheeted data is easy with *Excel*. First the information to be charted is selected by dragging the mouse on the spreadsheet, which highlights the data. Then "New" is chosen from the "File" menu (top). "Chart" is picked from a dialog box and a new chart is quickly windowed (bottom).

Dressing for Success

A corporate battle is not, necessarily, won simply by the logical content of spreadsheeted values in a report. There is always a certain amount of beautification that is needed to "sell" the data to those who can turn the numbers into reality.

Excel has some features that can turn a dull, dry spreadsheet into a blossoming rose—well, at least into an *attractive*, dull and dry spreadsheet!

The first thing *Excel* does is to allow for the horizontal and vertical row and column boundaries (called the grid) to be turned off rather than displayed or printed. Then the labels, both column and row, may be turned off.

But *Excel* goes far beyond that simple presentation change.

The Mac's font capabilities are fully supported. If you have a system file with 18-point Athens it would be possible to use such a typeface. Of course, most spreadsheets would look silly displayed in such a manner and the

more usual fonts that are installed in the standard *Excel* system will lead to much more worthwhile experiments in design.

Another exciting format feature is called "Borders" and is available in the Format menu. If a group of cells or a cell is selected the bordering gridlines may be turned on even if the rest of the sheet is blank with the main grid turned off. This means that you can do such things as call attention to a block of figures by outlining them. Or, titles can be blocked out so as to be visually separated from the data. Office forms can often be duplicated on-screen with the lines and rules looking pretty much as they do on paper; but unlike an on-paper form, the numbers are alive and presented in a fully spreadsheeted fashion.

More usual types of formatting are also supported. Numbers may be presented as simple figures, as dollars and cents with or without a dollar sign, complete with commas or with both commas and decimal point. Words and figures may be aligned in a column so as to be centered or flush left, flush right or just default to a general style of words flush left and numbers flush right.

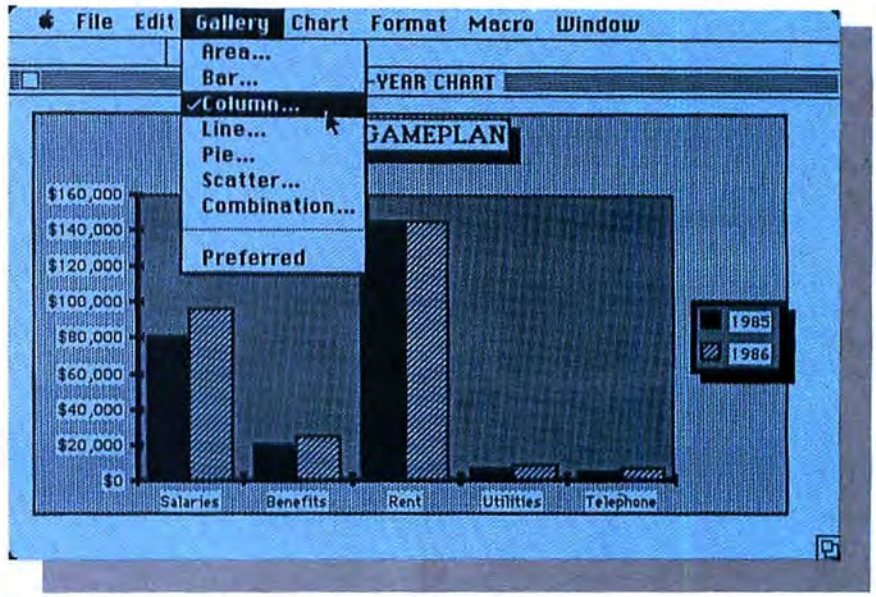


Fig. 3: Default charts are well-designed but extra formatting commands also allow for such things as tinted backgrounds, borders and different chart types.

Adding a Database

At any time, any part or parts of the worksheet may be selected to be a database and to use the database functions. While there are many types of data that just can't be presented in rows and columns, if the data can be so presented then *Excel* will do a good job of databasing.

Any number of cells and columns may be defined as a database by selecting the area and then choosing the "set database" option from the Data menu. But while you can keep the information for many databases on one form, only one database at a time may be selected as the one to be worked with.

A simple database might be a column of names followed by a column of phone numbers. The names and phone numbers are entered just as they might be for a spreadsheet.

Then the entire range of the two columns is selected as a database. At this point the user can begin to enter what are termed "selection criteria."

Let's say that all names that end in "Smith" are to be found. Simply typing "smith" (case does not matter) on a line by itself and selecting that from the Data menu as a criteria would result in all the Smiths being found—but also all the Smithers.

A comparison operator would have to be used in the criteria formula in order to narrow the search. In this case the user might set the formula not just to "smith" but to "=smith" since the equal sign calls for an exact match. A full range of comparison operators is available along with many database-specific functions. True searching capability is easily accessed including logical, or boolean, functions. These boolean operators (greater than, less than, greater than or equal to, less than or equal to, greater than or less than—known to mathematicians and spreadsheeters as >, <, >=, <=, <>) allow for many varied database tasks.

Couple these operators to functions such as DAVERAGE (which finds the average of numbers in a specified field matching other criteria) and DSTDEV (which finds the standard deviation of a

(continued on page 150)

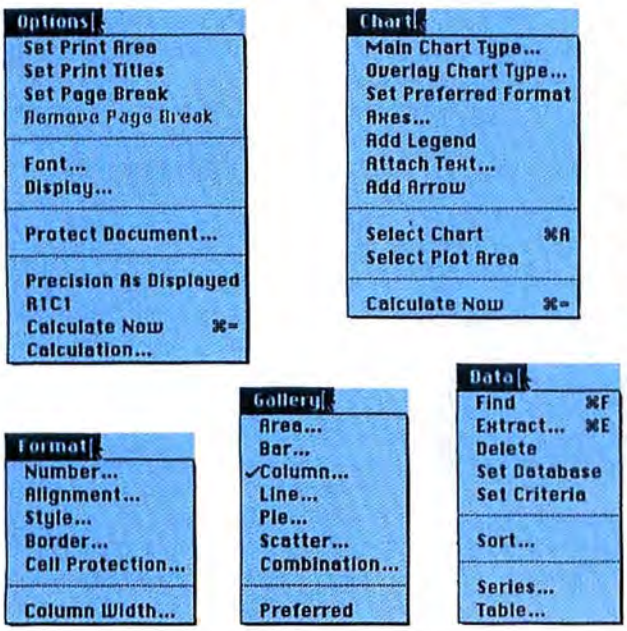


Fig. 4: *Excel* features a complete range of commands, all available via its pull-down menus. The Options Menu controls many of the on-screen options including how the rows and columns are labeled (R1C1). The Chart Menu helps to choose a chart for further formatting and allows for such extras as arrows and text to be added. In the Format Menu the user can choose to set individual cell borders as well as to align and format numerical data. Various styles of charts may be chosen from the Gallery Menu as well as combining chart types and setting default preferences. The Data Menu allows for worksheet information to be manipulated as a database.

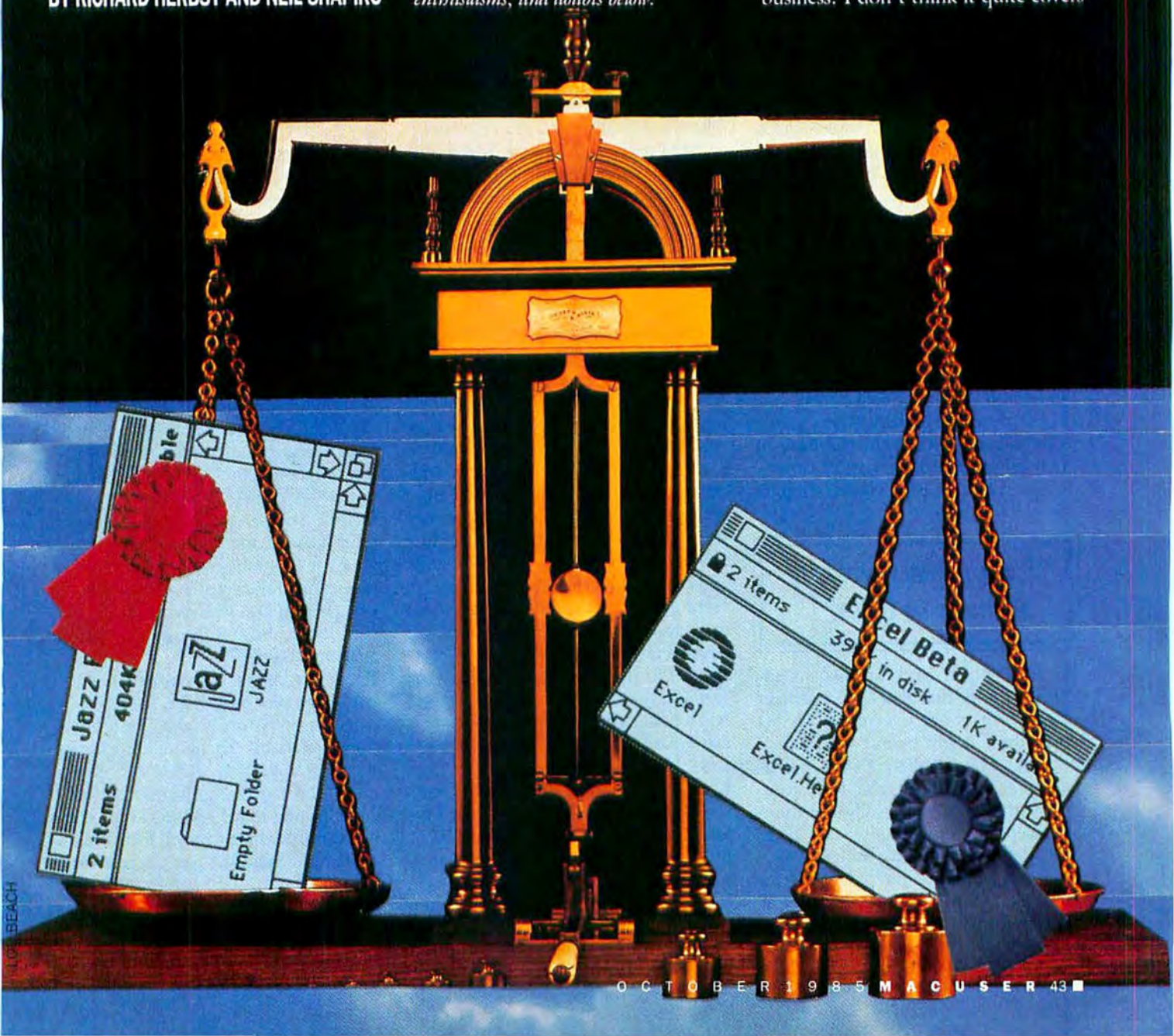
Jazz vs. Excel: IT'S WAR!

Two Editors Champion (and Critique) Two Huge Programs in a Battle Royale.

BY RICHARD HERBST AND NEIL SHAPIRO

BOTH JAZZ AND EXCEL WERE GIVEN a workout around the ***MacUser*** *offices during the course of putting together this issue. Features Editor Richard Herbst became the in-house* Jazzman *and Editor Neil Shapiro did his best to see if* Excel *might fail. The two share their reactions, enthusiasms, and doubts below:*

Neil: So, would you recommend *Jazz*?
Richard: I would have to qualify that recommendation by first defining just who is going to be using the software and for what purposes. Lotus says that *Jazz* will provide all the software resources necessary to run a small business. I don't think it quite covers



JAZZ VS. EXCEL

all the bases. Specifically, databases.

N: The database section on *Excel*, too, seems to be its weakest feature. I think that almost all integrated software shows that the spreadsheet format is not necessarily the best choice for many styles of information. But if it "fits" into columns and rows, I found that *Excel* did a good job of handling the data. What were some of *Jazz*'s problems? Maybe *Excel* had them too.

R: *Jazz*'s primary problem seems to be Lotus. Their proprietary corporate policy precludes creative exchange of data between competing programs. *Jazz* seems to be intended for the use of owners of Lotus products; *1-2-3*, *Symphony* and other copies of *Jazz*. It seems to have great difficulty in porting to other software. *Excel*, on the other hand, seems to have no problem in communicating its needs (sic) to other programs.

N: It does seem that Microsoft's SYLK format of file-interchange has become a standard. Of course, Microsoft is no angel either: the SYLK format always, to me, seemed to have been invented so that they could avoid using the previously established DIF file as much as possible. They just won is all.

R: Lotus claims to offer import/export facility with the SYLK format but, in fact, requires on-disk program modification to change files, at least in the version (Release 1.0) we have. But overall, the trend in the industry seems to be to acknowledge the existence of other styles of storing data. Lotus is doing itself a disservice by declaring its domain an island.

"Jazz's primary problem seems to be Lotus."

N: Meanwhile, back at the spreadsheet: I found that *Excel*'s spreadsheet offered just about everything that I could think might be in a spreadsheet package. The number of cells is staggering at first, until the realization dawns that you can't really use them all except for positioning your data. Still, there are so many built-in functions and format commands it's like a video game for the businessman.

R: *Jazz* is also a power user's paradise. The size of both spreadsheets is an argument for a 2-megabyte Mac. And remember the M68000 can address 16 megabytes. But back to data. What is, honestly, your favorite on-screen *Excel* feature?

N: If you mean in the spreadsheet area, it's got to be the on-screen formatting of data using the various fonts, font sizes and the unique border commands. By using the border commands to turn each individual cell's grid lines off or on, it's possible to make a spreadsheet that looks exactly like a form printed with rules and display type. Only, the form is alive, enter a figure and the others change. What was your favorite *Jazz* note?

R: That would have to be HotView! This is a live interface between any data program in *Jazz* (spreadsheet, database or chart) and a *Jazz* word processing document. Any data window on screen can be included in a document, and will reflect changes made to the original data document. Small charts, spreadsheets, even forms can be included randomly into a document. Until the HotView is "frozen," it remains live, even if the documents are closed.

N: Now that is a nice feature. *Excel*, of course, does not have a word processor built-in. Instead, Microsoft packs *Excel* with the latest version of Apple's *Switcher* program. Using the *Switcher* you can load both *Excel* and *MacWrite* (or *MS Word)* into memory. But you then use the normal clipboard cut-and-paste functions to move spreadsheets, database information and charts to a word-processed report. Just as in any other interchange, they remain static and once pasted that's it. So, although you can very quickly use the clipboard in conjunction with the *Switcher,* I'd have to give *Jazz* points for that HotView. On the other hand, how *is* the *Jazz* word processor?

R: Actually, the *Jazz* word processor is not great. It doesn't offer much more than *MacWrite 4.5* and is slower than both *MacWrite* and *MS Word*! That's saying something. It isn't intended for long documents. Working in a 40 or 50K file is a very frustrating experience. *Jazz* is packaged with Apple's 1.1g Finder which is slow when dealing with large documents. The fact that *Jazz* disks can't be backed up makes installing a new Finder risky business. Getting graphic for a moment, how do you rate *Excel*'s graphics?

N: The graphics are very good. With a little practice they can make all the difference between a ho-hum report and an exciting one. Like a lot of Mac owners I was already very used to *MS Chart*. The graphics routines in *Excel* "feel" like using *Chart*. The programmer tells me that they didn't simply pick up *Chart*'s subroutines and drop them into *Excel*, that it was much more

". . . there are so many built-in functions and format commands, it's like a video game for the businessman."

complicated that that, but it was surely my first impression. While some of *Chart*'s fancier touches are missing (things like beveled edges on borders) there are some additions. Making a chart, for example, is far easier than using *Multiplan* and *Chart* through the clipboard. You just mouse to your spreadsheeted data, select it, go to the File menu and wham! there's the chart on screen in its default format. From the default you can get as fancy as you like. Of course, as I mentioned in my article, there's the danger of charting yourself to death. The temptation is to include so many charts you'll drive your boss bananas trying to figure out what it is you meant! But, used moderately, the graphics can be *Excel*'s best point. I know that you're of an artistic bent, how did you like *Jazz*'s charting abilities?

R: *Jazz*'s charts are *Excel*lent. Stack your bars, plot your lines, scatter your percents to your heart's content as data, invariably changing in spreadsheets is reflected. You can't go to quite the extremes of framing and embellishing that *Excel* seems to offer, but then, *Jazz* is a musical form, not a stastistical Siren. But eventually, all this information must go somewhere.

R: *Excel*'s answer to offering five pro-

(continued on page 48)

Introducing MacWizardry

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T-SHIRT FANTASY

WORDS (and T-shirts) BY IAN MCKINNELL

So what if you can't afford a Gucci gown or designer jewelry! Thanks to your Mac you can be a stylesetter.



IF YOU'RE PROUD OF THE ARTISTIC abilities that the Mac has brought out in you then why not get it *on* your chest! Creating your own T-shirts on the Macintosh's ImageWriter is not difficult. Just think of it — accountants could have their own *Multiplan* T-shirt, architects wear their latest *MacDrawings*, games fanatics their best high score, and artists could really get their work out onto the streets.

The T-shirts portrayed here were designed using two products; the *Underware Colorpack*, consisting of a black ImageWriter ribbon together with five felt-tip pens (red, blue, yellow, green and orange); and I/O Designs' *Color Print Transfer* ribbons, four ImageWriter ribbons in black, red, yellow and blue.

Both work on the same principle — the image is printed onto ordinary paper as you would with a normal ribbon, but with the image horizontally reversed. This print is then used as a transfer, the image being ironed onto a T-shirt, or any similar material. If you've the time and the patience you could even print your own curtains!

Getting results with both of these products is quick and easy. But getting



LARRY WILLIAMS

T-SHIRT FANTASY

good, professional results takes a great deal of time and patience. I won't embarrass myself by telling you how many T-shirts I ruined in the preparation of this article!

With I/O Designs' *Color Print Transfer* ribbons, all the colors are applied using the ImageWriter. The colored ribbons are simply clipped into place instead of the normal ribbon. This involves breaking an image down into each of its separate colors and printing them individually on the same piece of paper which has to be wound back through the ImageWriter each time. Obviously this presents registration problems (though software is available, such as Esoft Enterprises' *ColorPrint*, to control the printer for you, giving greater accuracy than could be achieved by hand). However, for T-shirts such accuracy is not essential. Indeed I found that slight inaccuracies in the registration even gave the images a certain "naive charm" (well, this is supposed to be an arty article).

The greatest difficulty in using the *Color Print* ribbons was with the ImageWriter. If you haven't paid much attention to its manual before, you certainly will when using this product. In particular, the printhead has to be kept spotlessly clean, especially with the yellow ribbon, and the distance of the printhead from the paper must be carefully monitored.

One criticism I would make of these ribbons is that they seem very short and consequently don't last very long, particularly the yellow, which is easily contaminated by a dirty printhead. But when fresh, and carefully applied, the ribbons give a rich, pleasing color.

Although the ribbons come in only four basic colors, a wide spectrum can be obtained by combining the colors together. Green, for example, is solid yellow overprinted with a tone (pattern) of blue; varying the patterns changes the intensity of the hue.

Underware's *Colorpack* is easier to use, mainly because the ImageWriter does not need such careful attention. The colors are applied using felt-tip pens after the original black image has been printed. However, I found that if the inks were applied onto the original print then the black would bleed, making the colors appear dirty. If the original print is used as a tracing guide, then the colors can be applied separately to a fresh sheet of paper and ironed over the original transfer, giving much better, cleaner results. While this method does give you more freedom, solid color is more difficult to apply, and the colors being applied by hand results in the finished product losing some of its distinctive "Mac" look.

The main problem with both products occurs when it comes to applying them to the T-shirt. This is far from being the straightforward process I imagined, and almost drove me to despair. The inks invariably bleed and spread, so that any closely detailed drawings disappear into a messy black smudge. This is not a process suited to subtlety. It is also very difficult to apply the color evenly, impossible over a large area. Ideally the transfer should not be much bigger than the footprint of the iron, because moving the iron creates its own problems with the possibility of the transfer moving, creating a "ghost" image. Any large images should be built up from many smaller ones (some of these T-shirts involved over 30 separate images).

Ironing the image demands a very hot iron, which needs to be left in position for some considerable time. We (ironing these images is a two-person job, one to hold the transfer and look out for the hot iron wielded by another) used the scorching of the top layer of material placed over the transfer as an indication that the process was complete. The original print can often be used two, maybe even three, times. It is important to keep the area in which you are ironing clinically clean, and the material used between the iron and the transfer, as well as the protection beneath, should only ever be used once. I found it easiest to work on the floor, which also saved the ironing board from being "individualized" as well.

The most successful images were gained by making very small (1") drawings in *MacPaint*, which were then copied and pasted into *MacDraw*, so that the image could be greatly enlarged, unhampered by the limitation of *MacPaint*'s small window. Using *MacDraw* also simplifies the color separation process (the lines you don't want to print can be covered with white shapes and revealed later), and enables the picture to be made bigger than 10" x 8".

As to their longevity, I confess that I didn't pluck up the courage to wash them. The manufacturers recommend that the T-shirts subsequently be washed in cold water, and I would imagine it is unwise to iron them again.

But despite these problems, I found making these few T-shirts lots of fun, and recommend anybody to have a go (they could even be the answer to all those Christmas and birthday present problems). But practice on some scrap material first!

JAZZ VS. EXCEL

(continued from page 44)

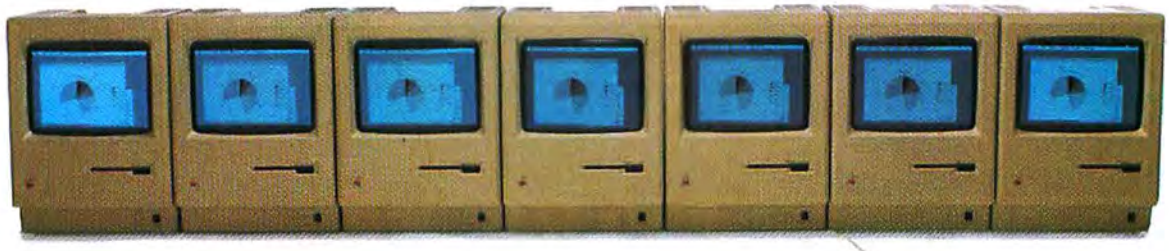
grams on a disk is to bundle the *Switcher* into its package. My feeling is that *Jazz* will gain a great deal of favor simply because it's an all-in-one package. There is no loading and unloading of programs to the *Switcher*; it's all there. Of course some sacrifices have to be made but then life is full of sacrifices. How do you think the *Switcher* configuration will stand up against *Jazz*?

N: For people with a hard drive, *Excel*'s approach is eminently feasible. But if you are floppy-bound, the loading in of *Excel*, then *Macwrite* and even *MacTerminal*, when you startup can seem pretty much like a hundred years. I'd say that if a person expects to be going back and forth between all of *Jazz*'s functions then *Jazz* is the way to go. But if spreadsheet, graphics and databases are where the user is at, then the *Excel* package stands out.

R: The question will ultimately be a personal one. The environmental approach with as little protocol as necessary versus the heavy tool approach. In the end, though, *Jazz* may be able to be the software package for a small business, but not as Lotus defines it. I think the small business will be somewhere in the category of under 100 persons, not under 1,000.

N: Well, I think the important thing is that **MacUser** was sent free copies of both programs! Too bad everybody isn't that lucky. . . .

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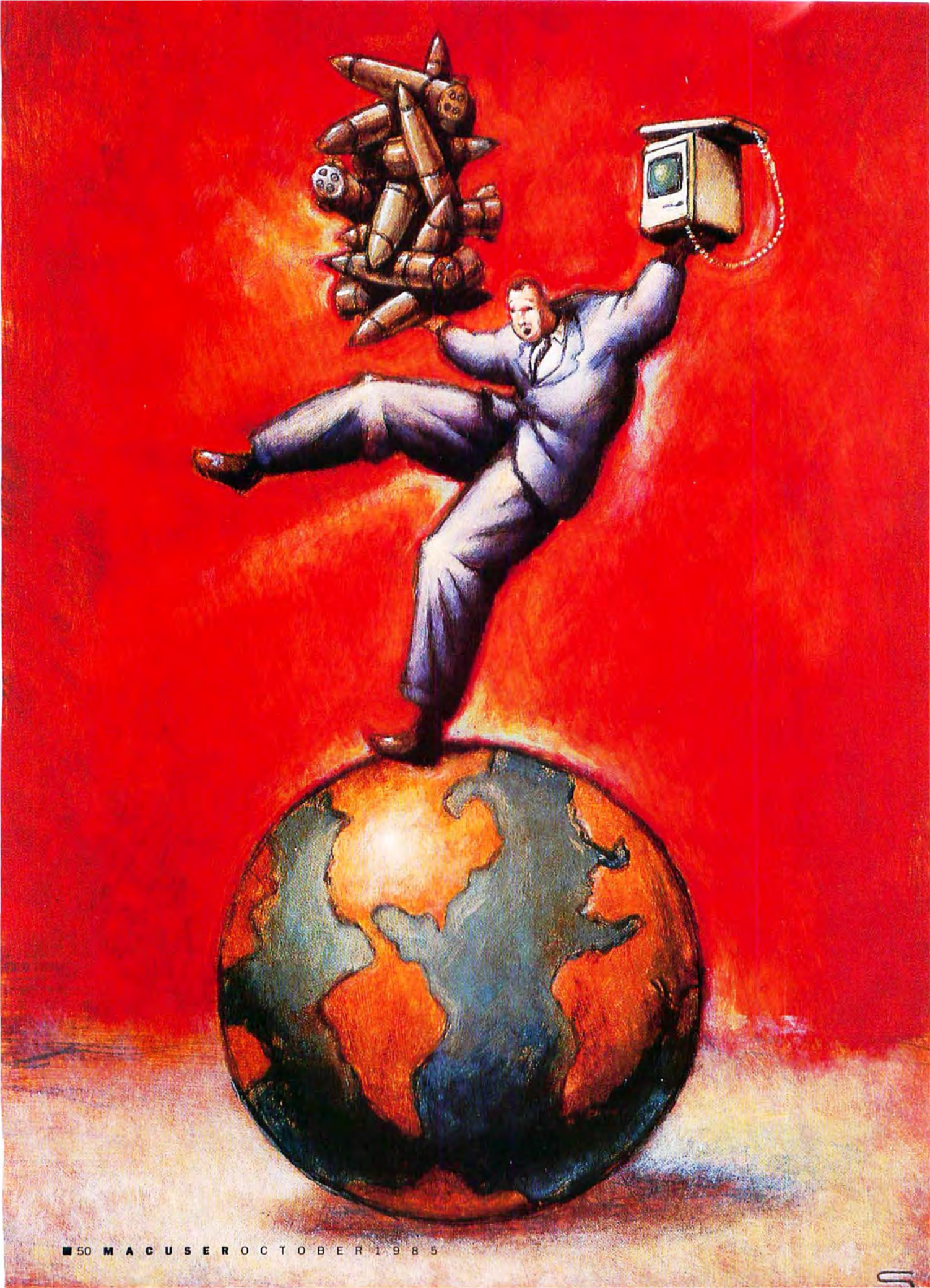
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BALANCE OF POWER: Click Softly and Carry a Big Mac

BY NEIL SHAPIRO

REBELS. IT WAS GETTING HARD TO keep track of them all. I was supporting the ones in Nicaragua, freedom fighters to whom I was funnelling over a half-billion dollars a year in aid along with thousands of "military advisors" to lend a helping hand. Then there were the bloody Kenyattan terrorists who owed me only their hatred for my continued support of a repressive, but very friendly to me, regime. Of course, there was that *thing* in Zaire, and certainly I wasn't going to mention Afghanistan at the next summit, Vladimir was very touchy about that.

My prestige level was higher than ever so I wasn't too worried when Vladimir sent me the angry diplomatic note about my aid to a few Libyan insurgents and an insignificant little attempt to stage a coup d'etat over there. I figured he'd shrug it off. After all, I let him take Chile.

What a surprise when he went to Defense Condition 4 over it. But it wasn't the first time the clever bear had tried to bluff a DefCon; hey, he didn't want the war anymore than I did.

The whole world was watching. We were eyeball to eyeball and damned if I was going to be the one to blink! Not in front of Dan Rather, anyway.

The crisis continued to escalate, and I moved the United States to DefCon 3, how was I to know DefCon 2 would be Vladimir's response? By the time they hustled me out of Washington there was already panic. Good thing that Air Force One made it to The Mountain.

Things are quiet here, under The Mountain. They tell me not to worry. Still, I can't help but wonder where I went wrong. It was all going so well. Perhaps I should have paid more attention to the daily briefings.

Of Mice and Diplomats

Luckily, for all of us (especially Nancy Reagan), I wasn't really the President of the United States but was simply taking part in a new simulation "game" for the Mac called *Balance of Power*. One player, the President of the United States, moves his forces and delegates aid, money and men as the other player, the leader of the Soviet Union, does the same. Both attempt to expand their country's respective spheres of influence and worldwide prestige — through confrontations just short of bringing on a nuclear war.

But *Balance of Power* is not a simplistic game like *Risk* or *Diplomacy*. It is a distillation of all of the hopes, fears, prejudices, turmoil, saintliness, evil and all that is human behind the ever-changing parade of topical headlines. Just like the world, a game of *Balance of Power* careens from crisis point to crisis point.

World on the Desktop

Boot the disk and a Mercator projection map of the world forms on screen. Move the mouse to any of the countries depicted and click. The country highlights to show that it has been chosen as the country the player is ready to formulate foreign policy toward. Double-clicking on a country takes you to that country's Closeup window for an in-depth, text look at some of that region's most salient features.

The menu bar above the map offers choices of Countries, USA, USSR, Make Polices, Events and Briefings. At the bottom of the map the USA and USSR scores are given in the form of prestige points. All of the gamer's decisions are entered into the game via the choices in the Make Policies menu, all the other menus and their choices are there simply to display information so that the player may have the backgound needed to make sound decisions.

And, the amount of background it's possible to find out is fantastic.

The choices in the Countries menu will redraw the world map in a half-dozen different ways. With each choice the map is shaded differently so as to show various worldwide facts and conditions at a glance. The Spheres of Influence map shows which countries are solidly behind each of the superpowers as well as less-surely behind them. The Major Events map will detail which countries may have undergone alignment changes in the past turn. The Insurgency map details which countries are bedeviled with terrorists, guerilla warfare and civil war. The Coup D'etat map shows the percentage chance of a change in government in each country and the Finland-USA and Finland-USSR choices show the possible "finlandization" of each country.

Finlandization is one of the keys to the game. Back in World War II (before there were microcomputers, and mice simply carried plagues) Finland allied itself to the Nazis against the Soviet Union. After the war, none of the western powers were very thrilled with Finland. That country was left alone as it watched the Soviet Union begin to swallow up

the countries of the Eastern Bloc. As the game's manual puts it, Finland's people "saw the writing on the wall." Their foreign policy became, and seemingly remains, simply whatever will appease the USSR. Although the USSR has never directly annexed Finland, the country is well within the Soviet sphere.

When a country finlandizes, it means that it has fallen within the sphere of influence of a superpower motivated by the fear of that superpower.

Of course, the player cannot count on countries finlandizing unless they have good reason to do so. Usually, the first impetus for a country to finlandize is because the superpower player is doing so well throughout the rest of the world.

Many countries can fall within a power's sphere in less subtle ways than finlandization. In the Make Policies menu, the player may do such things as allocate military aid to a government, send aid to insurgents, intervene with troops for a government, send troops to support rebels, send economic aid, attempt to destabilize a government, sign treaties and apply diplomatic pressure.

Each country's Closeup window details much of that country's internal politics as well as its present foreign policy. The Closeup window also details what each of the superpowers is doing in that country.

The History choice under the Briefings menu will prove invaluable to the advanced player. When this choice is made an entirely new menu bar of choices appears, each choice being a potpourri of information.

If, for example, there is a revolution in Nicaragua the Closeup window will detail that there is a growing insurgency there against a government that is extremely leftist. Further, the government is not militarily strong but is politically powerful. Finally, it will be shown that the present government is friendly to the USSR.

As it happens, and as the game well simulates, leftist governments often evince such philosophies and friendships. So, it's left up to the player what to do. Should the Nicaraguan incident be left alone it is likely to encourage the USSR to further challenge the American sphere of influence. But what should the player do? All options from Machiavellian destabilization of the present regime, through sending the Contras money, to sending the Marines are supported.

Of course, if actions are taken that the other superpower simply does not like, the world moves into a crisis.

Eyeball to Eyeball

Either player (whether human or computer-controlled) may question the other player's actions before they are carried out via the Crisis window. Every action of the other player is presented for review. Each may be individually objected to.

Each objection results in a dialog box where the objection is asserted. The other player may choose to back down or not. The first objection is considered to be just a diplomatic note that has been received. However, if the player does not back down the other player may decide to threaten publicly. At this point the real crisis begins as the whole world looks on. There are now prestige points at stake, although at this level of crisis, not very many. If the crisis continues it may become a military crisis as one country or the other enters one of four possible defense conditions. DefCon 4 is the first military alert and as the crisis moves to DefCon 2 (just short of war) the number of prestige points at stake grows higher. DefCon 1 is, of course, nuclear war.

Knowing when, and how, to bluff and being able to recognize a diplomatic bluff is integral to the play of the game. It is not easy. The computer intelligence is a canny opponent who deeply understands the worldwide variables.

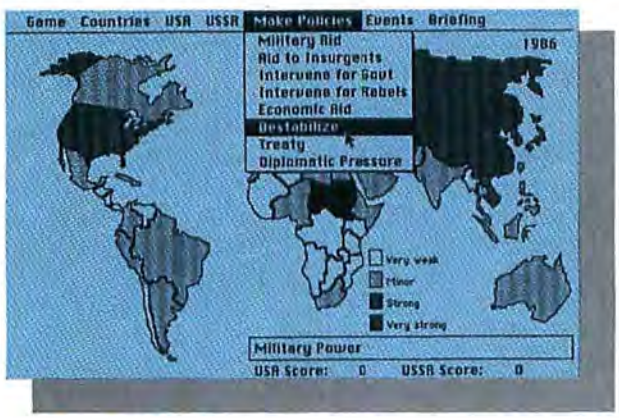
If you, as the American president, are challenged for sending military aid to Mexico to quell terrorists it is pretty safe to assume that the challenge is a simple bluff. After all, Mexico is on your borders, is well within your sphere of influence, and there are treaties tying your countries together. But what about if the Soviet player challenges your support of the Sudanese rebels? Whether or not the Soviet player is bluffing will depend on such as Sudan's relationship by treaty to the Soviet Union, by the amount of aid each country may be sending, by what is happening in the surrounding countries and even whether or not the USA has recently backed down in a different crisis.

The only victory in the game is to survive an eight-year term of office with your country's prestige in the world higher than the other country's. But, even just surviving means that you must be able to walk this diplomatic tightrope without a slip.

Wheel Within Wheels

The game of *Balance of Power* is so believable as to be uncanny. Designer and programmer Chris Crawford has turned in what I personally feel is the first "classic" game to be done originally on the Macintosh.

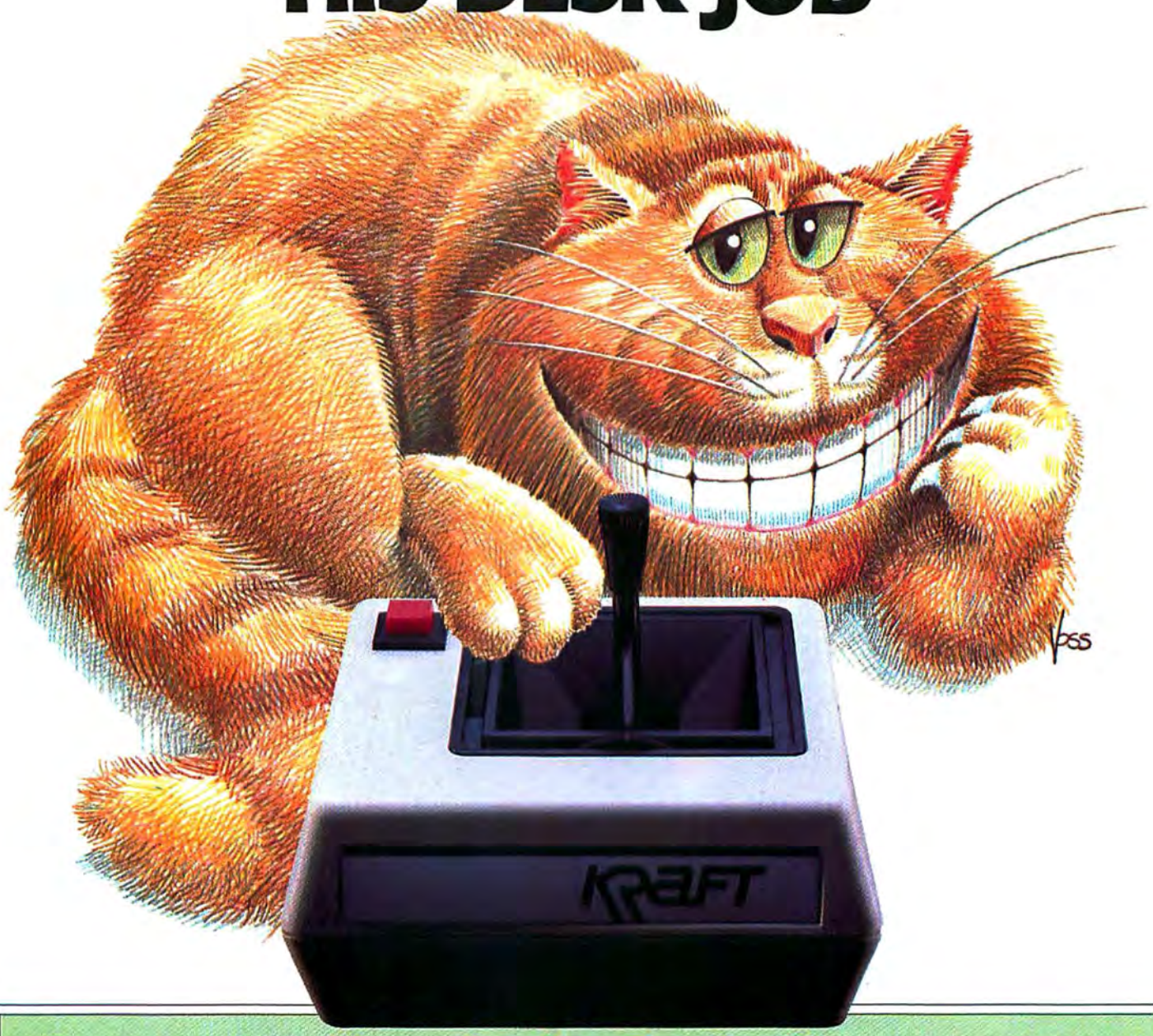
Most of the game's value lies in the careful research done by the author on the various countries simulated. The facts that he could uncover are factored right into the program's hidden equations. The many judgment calls neccessary during the programming



Destabilize a government with a click of the mouse; but be prepared to be challenged. The world is the playing arena in *Balance of Power* but the real prize lies in preserving the world from nuclear destruction.

(continued on page 148)

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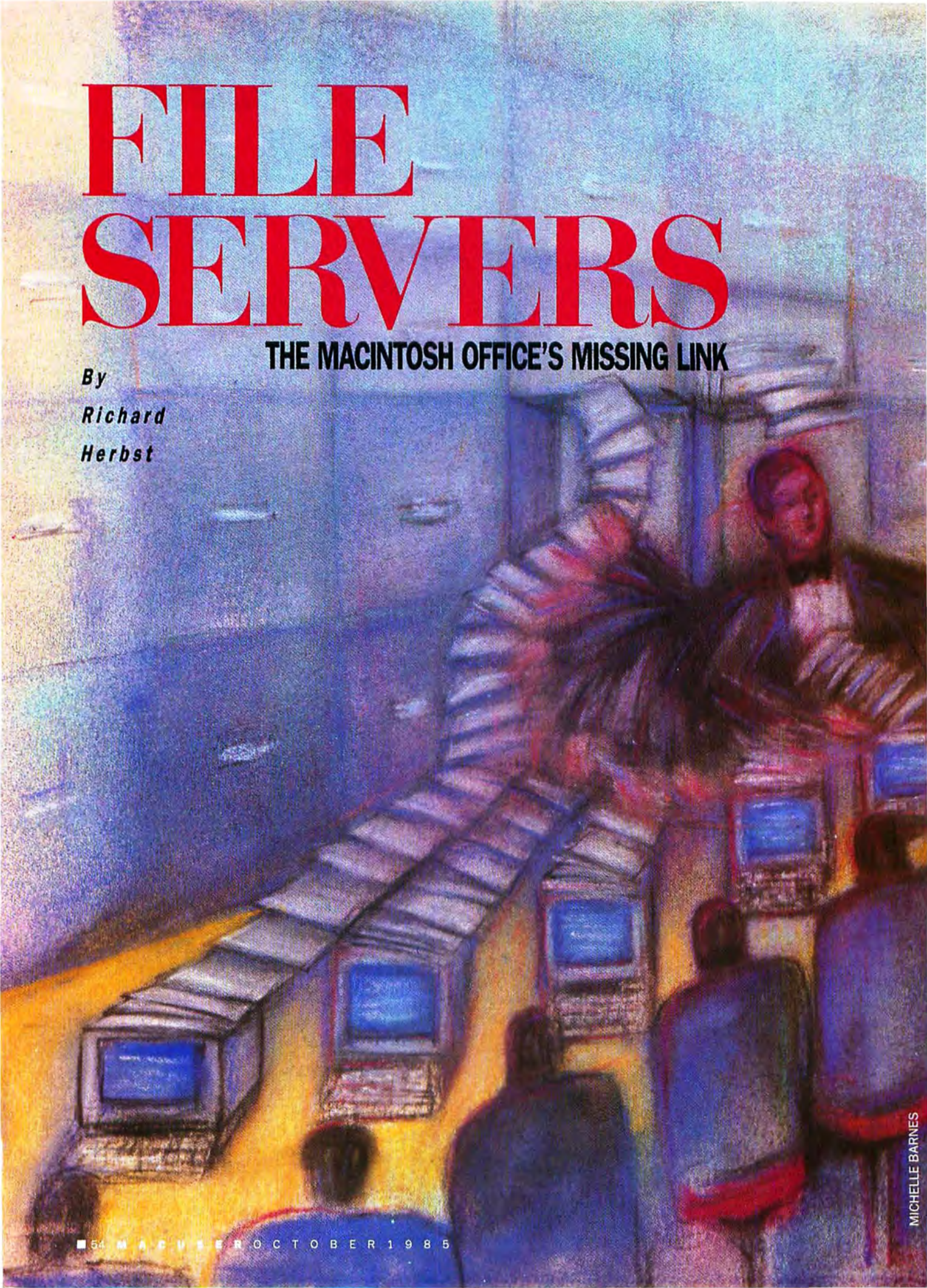
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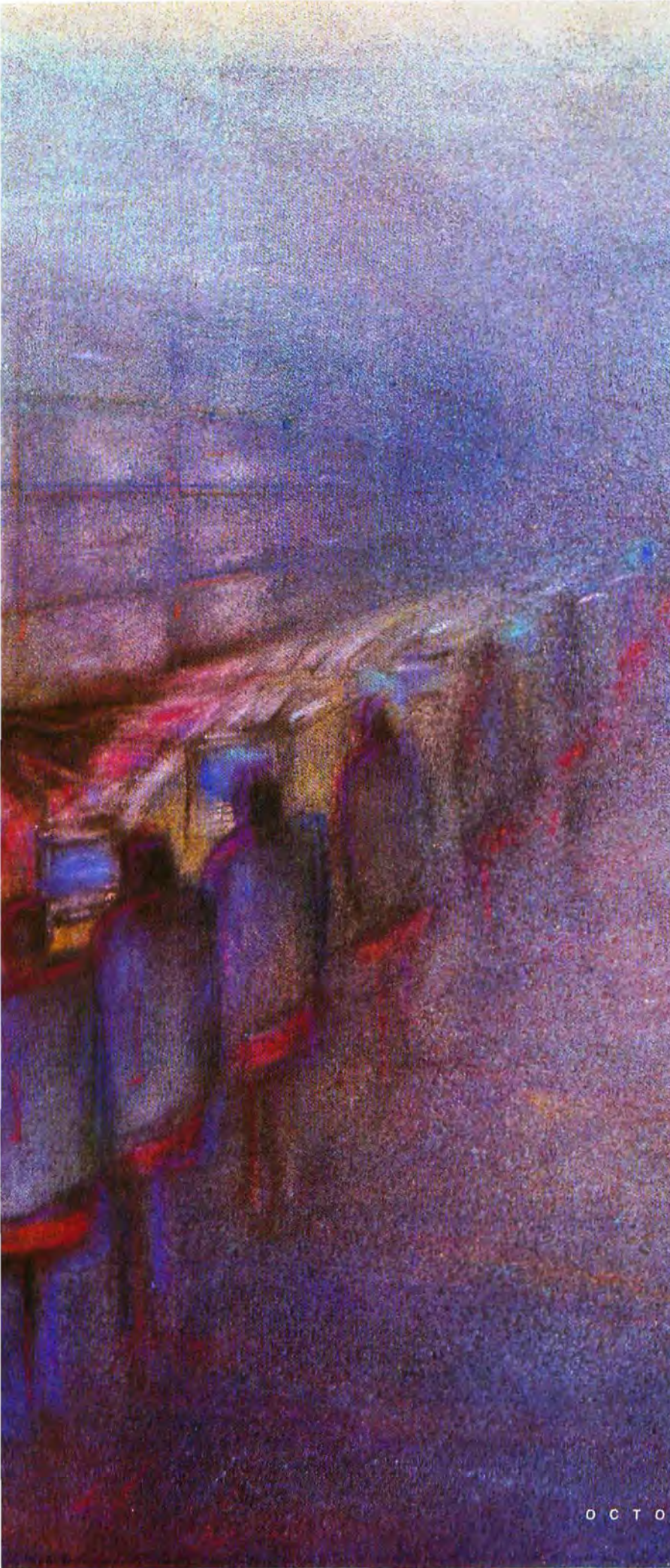
FILE SERVERS

THE MACINTOSH OFFICE'S MISSING LINK

By Richard Herbst



MICHELLE BARNES



The Macintosh Office is more than just cable linking Macs together. It's a whole new environment and file servers are turning on the lights.

"HAVE YOU GOT THE SPREADSHEET with last months sales totals?" cries an anguished employee rushing to complete a project. "I'm using it to port some stuff over from a database," comes the distant reply. "You can have it in an hour but I need it back after lunch." This scenario does not reflect the efficiency implied in the Macintosh Office.

The purpose of a Local Area Network (LAN) such as AppleTalk, is to share expensive peripherals and valuable data. A single large-capacity hard disk reduces the piles of floppy disks in the office. Linking the computers together in a AppleTalk Personal Network using AppleTalk Transaction Protocols (ATP) provides standardized data transfer. And introducing a *file server* and a LaserWriter brings in the intelligence necessary for orderly and efficient management of tasks on the network. An AppleTalk Personal Network is much more cost-effective for small to medium sized offices than a mainframe or a super-mini with a string of terminals.

Let's Get Physical

The elements that make up a network are the computers themselves, the physical linking via AppleTalk cables, and the hardware

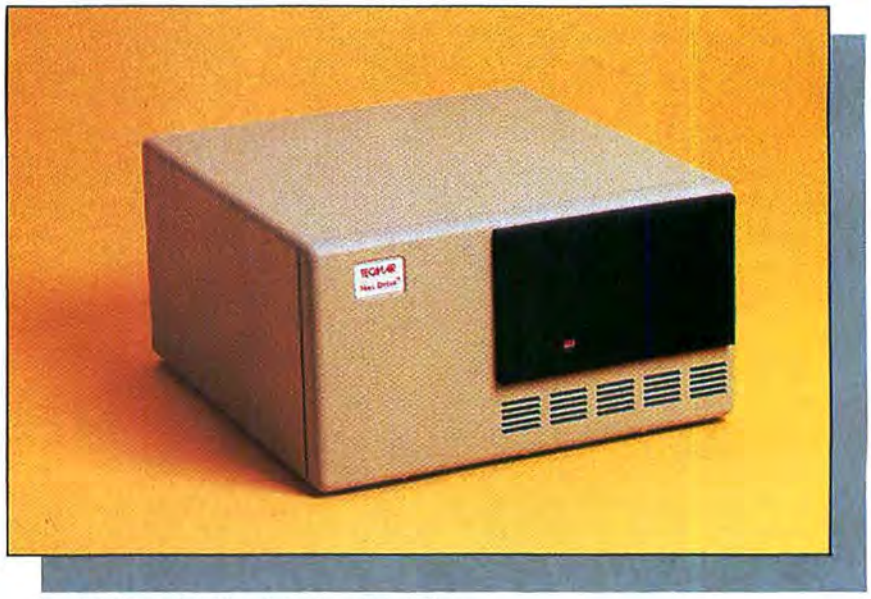
devices (such as LaserWriters) whose services the computers can now share. Data transfer takes place along the AppleTalk cables placed between the printer ports of the Macs and the various devices on the network.

There are two basic hardware categories: intelligent and non-intelligent (or dedicated). Intelligent devices have their own processors, memory and installed ROM to "serve" the members of the network without depending upon the central processing unit (CPU) of one of the computers for control. Dedicated devices require the use of a computer's CPU and part of its memory for operation. The LaserWriter is an example of an intelligent device. With 500K of ROM and a 68000 processor and around 1.5 megabytes of random access memory, it is a highly independent system accepting files from any configured computer on AppleTalk.

The ImageWriter is a non-intelligent, or dedicated, device relying for control upon the computer calling for it to print. It cannot function on AppleTalk without a special device called a serial server. The LaserWriter falls into the class of network servers called *device servers*. Other device servers include *modem servers* and *serial servers*. Modem servers are currently under development and Hayes recently has introduced a serial server whose function is to provide both a CPU and memory to make dedicated devices like the ImageWriter available to calls from the network.



Sunol's *SunMac* offers large capacity and speed.



Tecmar's 10-megabyte *MacDrive* features print spooling.

A few words about hard disks . . .

Both hard disks and floppy disks are storage mediums, but while a floppy's upper limit is 400K, hard disks can store from 5,000K (5-megabytes) to 100,000K and more. A typical 10-megabyte hard disk has 10,000K of storage space available.

The first thing to consider about a hard disk is who will be using it. If it's intended for a single user, then it doesn't have to have file server or disk server capabilities because it will not be part of a network. The original Macintosh Finder can keep track of up to 128 files per disk. With the advent of the new Finder, version 4.1, five hundred files can be managed. Assuming an average file size of 10 K, only half of a 10-megabyte drive's storage capacity can be used. By partitioning the hard disk into smaller sized volumes or drawers, the upper limit of 500 files is multiplied by the number of volumes that can be created on the hard disk. So, if a hard disk is partitioned into a minimum of two volumes, the entire 10 megabytes of storage capacity can be utilized. With larger systems such as 20-, 33- and 92-megabyte capacity, hard disks are partitioned with *Volumizing* or Volume *Managing* software. This is offered by most manufacturers, with Apple a notable exception.

Computer Etiquette: Which Server?

Apple defines file servers as devices which support file access operations over a network. Basically, what this means is that any number of computers on a network can open the same file simultaneously.

Once a file has been saved it has a name, a size (in bytes) and a location (or address) all of which must be

MARIA ROBLEDO

HARD DISKS

Company	TECMAR	MICRO-DESIGN	GEN. COMPUTER	CORVUS	SUNOL	IOMEGA	PCPC
Name	MacDrive	Keeper	HyperDrive	OmniDrive	SunMac	Bernoulli Box	Mac Bottom
Size(s)-Megabytes	5-15	10-33	10	5-126	10-368	10	10
Supports AppleTalk	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intelligent	Yes	Yes	No	No	Yes	No	No
Server type	Single user	File server	Single user	Disk server	Disk server	Disk server	Single user
Security	None	Passwords-2 levels	Passwords-3 levels	Passwords-1 level	Password-1 level	NA	NA
Encryption	No	No	Yes	No	No	No	NA
Volumizing SW	Yes; application	Yes; desk accessory	Yes; desk accessory	Yes; application	Yes; application	Yes; application	Yes; application
Partitioning; Kbytes	400-2500	Dynamic sizing	Dynamic sizing	800, 1600, 3200, 6400	7 virtual drives; 16 vols.ea.	NA	NA
Max.vols.on desktop	4	32	32	6	4	NA	NA
Print spooling	Yes	Yes	No	No	Yes	No	NA
Port connect	Printer	Printer	Internal	Printer	Printer	Ext. drive	Printer
Transfer rate: Single User	920K bits/sec.	920K bits/sec.	5M bits/sec.	920K bits/sec.	920K bits/sec.	489K bits/sec.	920K bits/sec.
Transfer rate: AppleTalk	230K bits/sec.	230K bits/sec.	230K bits/sec.	230K bits/sec.	230K bits/sec.	230K bits/sec.	230K bits/sec.
Backup	Utility + cartridge	Utility + cartridge	Desktop utility	Desktop utility	26 Meg. tape	Desktop utility	Desktop utility
Basic List Price	$1995	$2295	$2195	$1495	$2195	$1895	$1595

known for the file to be re-opened and manipulated. If the file is stored on a hard disk central to all the computers on the network, a call can be made from any station to the hard disk storage area.

Software idiosyncracies play an important part here. Microsoft's *File*, for instance was written without multi-user protocols and only one network computer can open a *File* document at a time. Copies of a file, with slight variations in the file name, can be made in this instance when it is necessary for two or more parties to view a file at once.

Some software, such as *MacWrite*, creates temporary or duplicate files in the computer that made the call. Changes to that file can be made only by the party that made the call, but any other user on the network can call up a copy of the original. Other parties can write to the file appearing on their computer but changes must be Saved As and the file name changed to create another file. This is also true of *MacPaint* and *Multiplan*.

Because a true file server is intelligent, it has the resources to keep track of files and to pemit only the first caller to edit or write to the file. Other users are alerted that the file is already open, so, in effect, subsequent calls display read-only files.

Another category of server is the disk server. This server responds to block requests. The block represents the actual file called, but there is no record of whether or not this file is already open. To protect one user's open file from another user, disk servers employ a special coding technique called semaphores that alert the system that a file is open in a specific volume. Only one user can be active in that volume at a time. This more roundabout method is time consuming and does not completely utilize the best features of a network. It is adequate for a situation where each user has his own discrete volume.

A third type of server is called a data server. This device is a bit more exotic and responds to requests for a specified portion of a file such as the first 10 records in a database. With a data server, a team of accountants could descend upon a large spreadsheet and work without corrupting each other's records.

Several manufacturers are offering various types of disk servers including Corvus, Sunol and IOmega. Each of these has to deal with the limitations specified above. Although Apple has been promising a file server for some time, only Micro-Design's Keeper presently fills all the qualifications of a true file server.

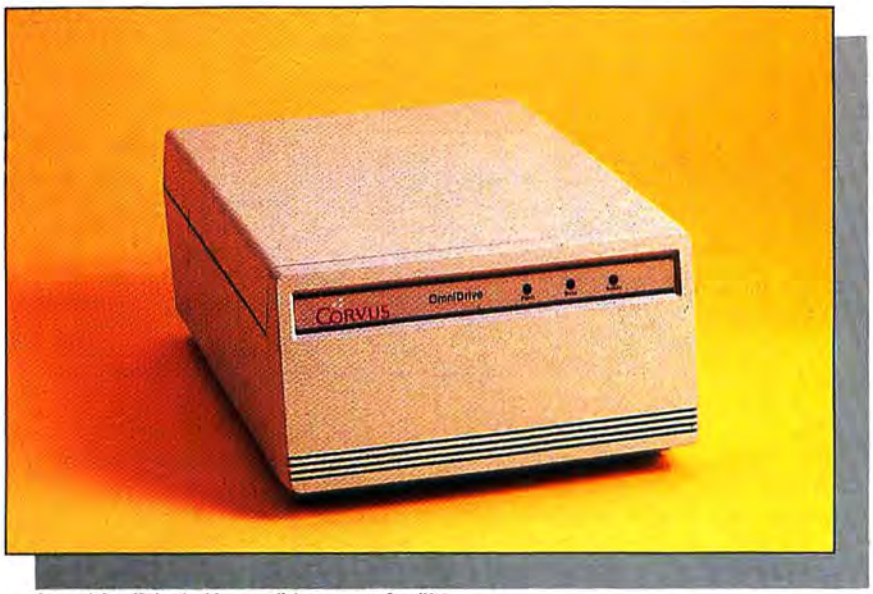
Keeper Happy

One or more Keepers can be connected to an AppleTalk Network. All computers on the network have access to each of the volumes and files stored. A single Keeper can hold up to 64 volumes with as many as 32 active volumes on any desktop at once. While disk servers are restricted by the Finder's limitations, the Keeper, with 512K of RAM and a 68008 processor can manage as many as 2,000 files in a single volume. The Keeper is, in effect, taking over the responsibilities of the Finder.

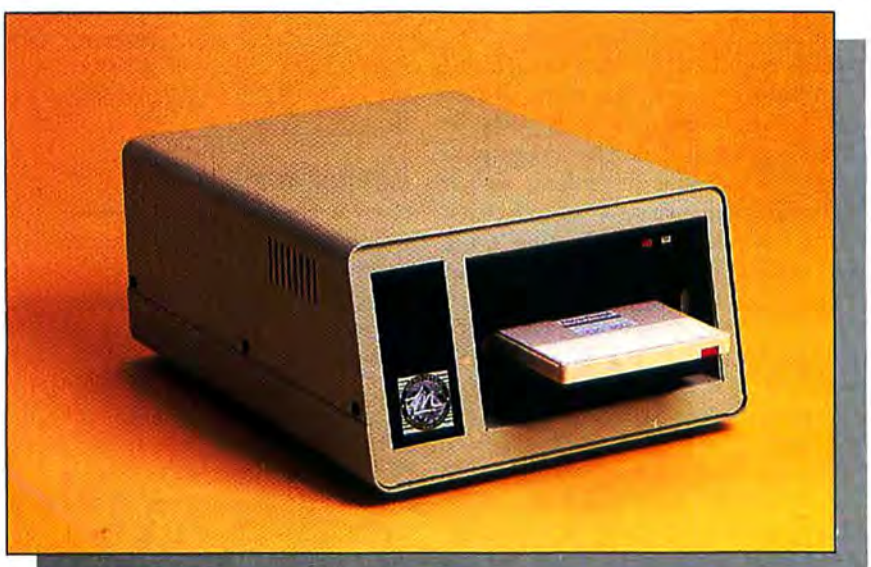
FILE SERVERS

The volume management software, unlike Corvus and Tecmar's, is loaded as a desk accessory instead of a separate application, making it available from the menu at any time. Dynamically sized volumes are an important feature of this software. Once a volume is opened you don't have to allocate arbitrary disk space for that volume—it resizes itself as more files are stored and, just as important, as files are removed. Any or all of the volumes can be secured with passwords so that private files can be maintained. Allocation blocks are the smallest sized units that can be added to a file within a volume. The Keeper's allocation blocks are 2K, making it a very space-efficient system.

An important feature to look for in any storage system is a facility for backing up files. It can be very frustrating, indeed, to see months of work locked up in a drive that has failed. Sunol offers a 26-megabyte streaming tape cartridge for backup. One of Tecmar's options is a backup application for use with floppy disks. Tecmar, IOmega and Micro-Design all offer configurations with 5-megabyte removable hard disk cartridges, but any fixed disk system must be backed up onto floppies and most provide applications for this.



Corvus' *OmniDrive* doubles as a disk-server on *OmniNet*.



Micro-Design's *Keeper* is a true file server.

Speed

The single most apparent change when switching over to a hard disk is the speed with which files and applications are accessed. Hard disks do everything faster than floppy disks because, for one thing, they turn much faster, usually 3600 rpm as opposed to 300 to 600 rpm for a floppy. The fastest hard disk for the Macintosh is currently the HyperDrive, which connects directly to the internal bus (the other hard disks use one of the Mac's serial ports). The HyperDrive is a single-user system. When you go to a network, though, a slight dampening factor is added. While the data transfer rate from the best dedicated and single-user drives is around 900 kilobits per second, data transfer on AppleTalk is 230 kilobits per second. This is not at all slow, but it is not quite what you are used to seeing in a single user hard disk. In the future, time will be saved and apparent speed increased with the introduction of data servers.

Who Are File Servers For?

A file server will earn its keep anywhere that a group of computers is used. In the extended environment offered by products like *Excel, Jazz, OverVUE, Ensemble* and *Quartet* as well as in more vertical applications like *WOSbase* and *Omnis 3*, the costly duplication of effort and investment in printing resources are kept to strict minimums. All of the recordkeeping operations of a company or work group can be centrally located in a physical sense and be made available locally to any workstation. Commonly used files like downloaded telecommunications documents can be read-only files and used as part of a library of reference material. Law offices and educational institutions, accounting firms and medical laboratories all benefit from configurations like this. While file servers are not for single users, they should definitely be a consideration where expansion to a network seems a possibility.

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THE WIZARD IS IN

Welcome to the World of Fantasy Role-Playing Games

By Tracie Forman Hines

PUT DOWN THAT SPREADSHEET, just for a minute. Now imagine a world in which magic is the norm, where elves, dwarves, and hobbits exist peacefully side by side. Imagine yourself in this world — what would you want to be? A musclebound fighter wielding a longsword? A wizened mage armed only with a staff and a spell tome? Or are you the hobbit type? Leave this drab little world behind for a moment, and don't even *think* about those mortgage payments, your kid's bad grades, or the fact that Fido just had an accident on the new dhurri rug. You deserve a break, and we're going to show you how to enter and participate in worlds where heroism reigns supreme.

Role-Playing vs. Adventuring

Not all adventure games are role-playing games. In the latter, each player is given one or more characters, who can be assigned names, attributes (like high strength or intelligence), and generally, character class (fighter, wizard, thief) and race (human, elf, dwarf). Each character begins life as a relative weakling, with few possessions or powers. As a character gains experience during the adventure, he or she becomes stronger: wizards and clerics have more spells to cast, fighters swing more accurately and do more damage to their enemies, and in general the party grows into a force to be reckoned with.

The continuing popularity of role-playing games can be traced to the higher level of involvement they demand from the player. If you nurse a wizard along from a puny first-level character until it attains all the spell power and strength of a master necromancer, you're less apt to be cavalier about that character's fate. In an adventure that involves no role-playing (as in most text and illustrated adventures), the player could commit a suicidal move out of sheer frustration or boredom.

Role-playing games also differ from "standard" adventures in that the player generally knows all the options available in any given situation. There's not need to play "guess-which-word-the-program-parser-understands" or "What object do I give the troll to let me pass?" games with the computer; the instruction manuals explain what

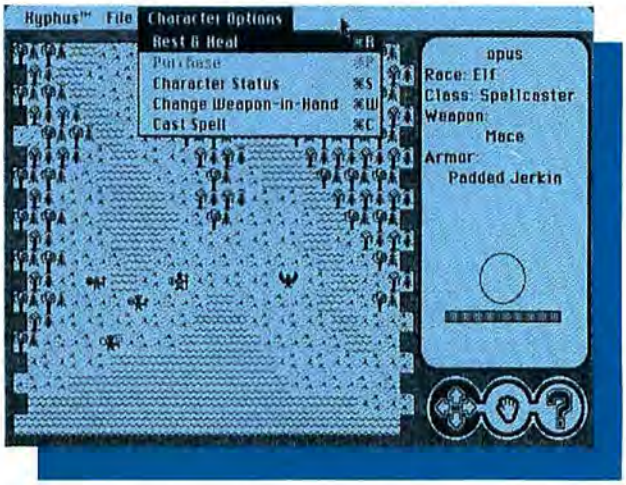


RICHARD DEL ROSSO

THE WIZARD IS IN

all magic spells do, how to transact with stores and townsfolk, and anything else you might need to know. Role-playing games also tend to be much more open-ended; that is, there are few lockstep patterns that must be executed (as in find the object that would satisfy a troll blocking a door) to progress further into the adventure.

As of this writing, all the role-playing games available for the Mac are designed around a pseudo-medieval scenario. Space operas and spy-style adventures are in the planning stages at several companies, but don't look for any science fiction role-playing games for at least the next few months.



Approaching a monster's lair in Xyphus: More monsters (at right) will appear as the party lingers in the area. Each of the four characters in the party can move individually.

Conquering Scenarios One at a Time

Xyphus (Penguin Software) offers a good introduction to the role-playing genre. Instead of challenging players to instantly master the intricacies of an entire disk-based universe, the game eases users into the drama, one scenario at a time.

Players can send up to four different characters into the world, and each can be either fighter or mage. The program features a unique way of displaying character's relative health. Each character has a white circle beneath his or her name. As the inevitable monster-made injuries mount up the circle fills in with a black wedge for each point of damage taken. When a circle turns all black, the character dies.

Fighters start out strong, but spell-casters have to learn their arts. Magic may be purchased directly from town shops, but at such a high price that most wizards will probably pick up their spells the hard way. Scrolls are conveniently left around the lairs of monsters who are vulnerable to the spell, but beware: when a party enters a monster's turf, the bad guys come out in force to defend it.

Much of a player's success in the game centers around good battle strategy. Maneuvering monsters into areas favorable to the party is half the fun. A good move is to lure attacking creatures right up to a town's borders, so that if a character is badly wounded he can just enter the building and be restored to full strength.

The designers added a clever Mac-like feature to the movement control scheme. Three icons (a four-way arrow, a hand and a question mark) are constantly displayed at the bottom of the screen. To enter the movement mode, simply click on the arrow icon and move your characters around the screen by pointing the cursor in the direction you want them to go. The party can check out territory on an adjacent screen before actually entering it by clicking on the hand icon. This lets you "grab" the playfield and move the map around, much as you would using the *MacPaint* hand. The only limitation is that you can't move the screen so far that your characters disappear. The question mark icon turns the cursor into an instant identifier, so that if you move it over a monster and click, you know exactly what you're up against.

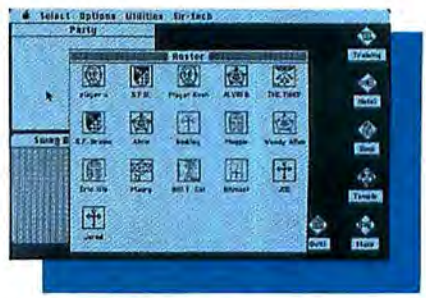
Of all the role-playing games available for Mac users, *Xyphus* is the least intimidating, thanks to its sequential structure and icon control. Robert Waller and Dave Albert pooled their respective talents to produce an easy-to-use game that both novice and more seasoned adventurers can enjoy.

Down into the Dungeon

Although by most computer games standards Sir-Tech's *Wizardry* should be too long in the tooth to take seriously (it was originally released for the Apple II — in the medieval days of computing, 1981, and later for the IBM PC), the richness of this dungeon quest is still reflected in strong sales and popularity. There's enough suspense and excitement here to keep adventurers happily playing till the wee hours. We can tell you from experience — the sleepless nights are worth it!

The new Mac edition features all the user-friendly perks Mac users are accustomed to (mouse control, icon-driven), as well as beautiful graphics, a huge array of monsters and traps to overcome and especially witty text (like the sign outside the lair of the evil wizard Werdna that reads "The Wizard Is In").

Players can band up to six different characters together into an adventuring party. The object? To best the archmage Werdna and bring his amulet back to your benefactor, Trebor. New characters begin their careers as fighters, mages, clerics, thieves, and (if their attributes are high enough) bishops. As they gain experience, especially strong characters might be offered the option of switching professions to become lords, samurais, or the ninja, deadliest of all.

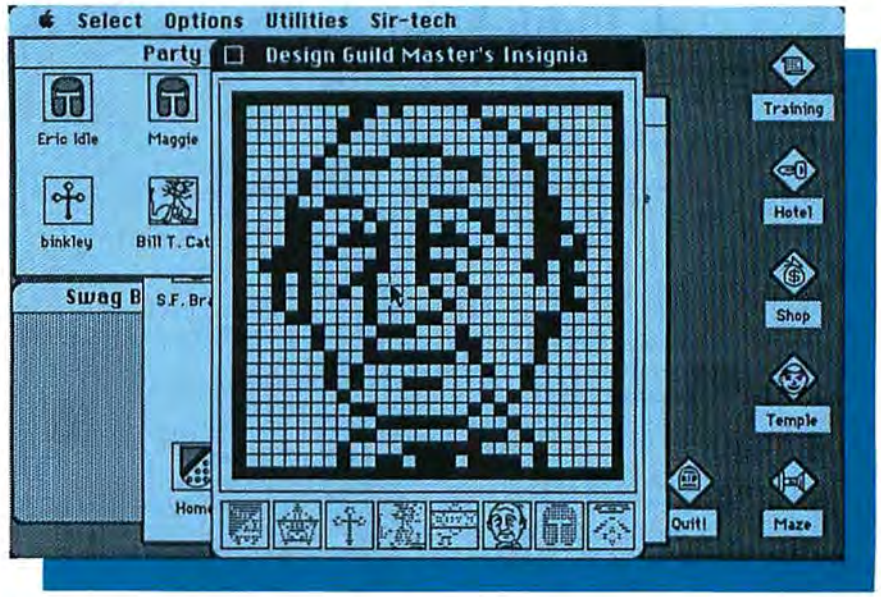


The Wizardry character roster, complete with personalized Guildmaster icons. Dimmed characters are in the maze.

The dungeon itself is ten levels deep, with each lower level populated by increasingly more dangerous monsters and trickier traps. Smart players will make and keep their own maps of each level, as teleportation rooms and traps can cause even the best-equipped party to get hopelessly lost in the maze.

Characters have to come up for air if they want to buy new equipment, regenerate their spellcasting abilities, or advance to the next experience level. The Temple, also located above the dungeon, can unparalyze or resurrect the dead — for a price, of course.

A particularly welcome feature lets Guildmasters — the highest level characters of each profession — personalize their own insignia icons by redrawing the image in a FatBits screen. Just add your character's initials to the design, or erase what's there and draw your own from scratch. The option permits any changes you care to make.



Only Guildmasters have the right to sport personalized icons. We designed this one for a samurai named Mayor Koch, using the same method as in MacPaint's FatBits mode.

The word "classic" is used too frequently in reference to popular computer games. But in designing an adventure that's as much fun now as it was four years ago, Andrew Greenberg and Robert Woodhead truly reached that benchmark. *Wizardry* offers players the chance to explore and exploit a dungeon in which everything is the enemy and only the skillful survive. If you like "Dungeons & Dragons"-style games — or think you would, but can't find enough time or players to play a full campaign — this is an excellent choice. Friends can even go adventuring together, with each controlling which actions and spells his or her characters will use. Look for Mac editions of two more *Wizardry* scenarios (each uses characters created with the original program) sometime next year.

The Adventure Continues

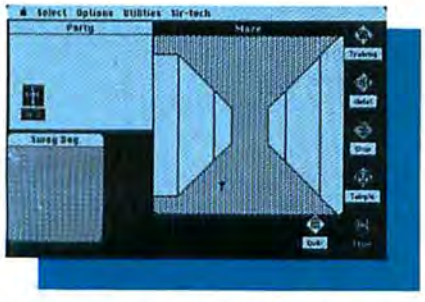
In designing the *Ultima* series, Lord British (known to his friends as Richard Garriott) created a literal universe. While the original *Ultima* has faded into the obscurity of the computer game graveyard due to early technical limitations, *Ultima II: Revenge of the Enchantress* (Sierra) and *Ultima III: Exodus* (Origin Systems) are both very popular in their Mac incarnations. The first two games in the series were produced while Garriott worked for Sierra; *Ultima III* and the forthcoming *Ultima IV* were designed and distributed by Origin Systems, a company founded by Richard and his brother Robert in an effort to retain more creative control over the finished product.

The *Ultima* scenarios have certain things in common: players use the mouse to control their on-screen alter egos, moving across terrain of various types. Entering a town or village means exploring every nook and cranny, talking to everyone you meet to find out as much useful information as possible, and buying necessary items like food, armor and weapons. As a character gains experience, he or she can take a trip to see Lord British himself, playing the role of a benevolent monarch as he doles out extra hit points (the amount of damage a character can sustain before dying) to the deserving adventurer.

Food is of the utmost importance in these games. Run out of it and you'll find yourselves dying slow, cowardly deaths, no matter how strong you are or what kind of armor you have on. Likewise, a good supply of torches is essential if you want to spend time exploring the hidden dungeons.

In *Ultima II*, the object is to seek out and defeat the evil sorceress Minax. A single character has to find, then properly utilize, the now-you-see-em, now-you-don't time doors scattered throughout the countryside. Only by

(continued on page 124)



The Wizardry maze, as seen from the party's perspective. This group could walk straight ahead or could turn left.



Not all spells are offensive in Wizardry. Here, a bishop casts the spell that tells a lost party exactly where it is.

Mac be nimble.

Terminal confusion.

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Ann Arbor Softworks
Animation Toolkit 1 32.
Create, edit, and animate pictures.

Apropos
You must have Multiplan to use.
Financial Planning 59.
Investment Planning 59.

Arrays/Continental
Home Accountant 82.
External drive recommended.

Assimilation
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Mac·Memory·Disk 21.
Mac·Spell·Right 59.
Requires version 3.3 or later of MacWrite.

ATI
Teach Yourself Multiplan $32.
MacCoach Training 45.

Axlon
Art Portfolio 36.
Card Shoppe 36.

Blyth Software
Omnis 2 *(requires external drive)* 139.
Omnis 3 *(requires 512k)* 349.

Brainpower
Statview *(statistics package)* 119.

Casady Company
Fluent Fonts *(two-disk set)* 29.

Central Point Software
Copy II Mac - *Version 4* 21.

Computer Software Design
MacLion *(relational database)* 199.
External drive recommended.

Creative Solutions
MacForth - Level 1 85.
MacForth - Level 2 135.
Level 2 includes an assembler, floating point, and advanced graphics.

DataFood
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Dow Jones
Straight Talk 45.
Spreadsheet Link 59.
Must have Multiplan, modem and Dow Jones Straight Talk.
Market Manager PLUS 115.
Track portfolio information.

Enterset
Quickpaint 32.
"Miniview" feature locates MacPaint drawings fast.
Quickword 39.
Create abbreviations for MacWrite or Word phrases.
Quickset 65.
Icon-driven true accessory with powerful calculations.

1st Byte
Smoothtalker *(version 2.0)* 59.
Voice synthesis software for the Mac.

Forethought
Typing Intrigue 31.
Factfinder 89.
FileMaker 115.

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ConcertWare+ 39.
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Harvard Associates
MacManager *(business simulation)* 32.
Desktoppers *(new desk accessories)* 32.

Hayden Software
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DaVinci Interiors 29.
DaVinci Landscapes $29.
DaVinci Building Blocks 46.
DaVinci Commercial Interiors 118.
Art Grabber with Body Shop 31.
Turbo Turtle 36.
I Know It's Here Somewhere 36.
Musicworks 46.
Hayden:Speller 47.
For MacWrite 4.5 and Microsoft Word.
Score Improvement System for the SAT 59.
College entrance-exam study guide.
Videoworks 59.
Ensemble 159.
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Hayes
Smartcom II *(communications software)* 89.

Hippopotamus Software
Hippo-Lock *(file security program)* 69.
Hippo-C - Level 1 89.
Hippo-C - Level 2 239.
Upgrade Hippo-C Level 1 to Level 2 .. 159.

Human Edge Software
Mind Prober 29.
The Communication Edge 99.
The Management Edge 129.
The Sales Edge 129.
The Negotiation Edge 149.

Ideaform
MacLabeler *(print disk labels)* 32.

Kensington
Graphic Accents 33.
Professional Type Fonts for Text 33.
Professional Type Fonts for Headlines .. 45.
Requires 512k.

Linguist's Software
Tech *(1000 different symbols)* 69.
MacGreek+ 69.
MacHebrew 69.
MacKana/Basic Kanji 69.
MacKorean 69.
MacGreek/Hebrew/Phonetics 119.

Living Videotext
ThinkTank 128k 77.
ThinkTank 512k 129.

Magnum
McPic - Volume I 31.
McPic - Volume II 31.
The Slide Show Magician 38.

Manhattan Graphics
Ready Set Go *(requires 512k)* 69.

Mark of the Unicorn
Professional Composer *(requires 512k)* 289.

Microsoft
Entrepreneur 32.
Learning Multiplan and Chart 42.
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Logo 79.
Basic *(version 2.0)* 89.
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Helix 225.
Requires 512k and external drive.
Paladin
Crunch *(requires 512k)* 175.
Palantir
MacType *(supports Dvorak keyboard)* 31.
MathFlash *(math flash card drills)* 31.
Accounts Receivable 89.
General Ledger 89.
Inventory Control 89.
Peachtree
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Accounts Payable 89.
Accounts Receivable 89.
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OverVUE *(version 2.0)* 149.
RealData, Inc.
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On Schedule 125.
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Reston Publishing
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Scarborough Systems
Mastertype 29.
Sierra On-Line
MacOneWrite *(cash disbursements)* .. 179.
Silicon Beach Software
Accessory Pak 1 24.
Simon & Schuster
The Mac Art Department 24.
Paper Airplane Construction Kit 24.
Typing Tutor III 31.
Software Publishing
PFS:File/Report 105.
State of the Art
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ClickOn Worksheet 47.
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Filevision 99.
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Aegis Development
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Sorcerer *(advanced)* 28.
Deadline *(expert)* 30.
Starcross *(expert)* 30.
Suspended *(expert)* 30.
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nnection does the trick.

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MacVegas 35.

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Assimilation
Mac-Epson-Connection 59
Mac-Daisywheel-Connection 75.
Mac-Turbo-Touch 75.
Compucable
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Mac to Epson FX/RX/JX printer cable .. 17.
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Curtis Manufacturing
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Diamond *(6 outlets)* 32.
Emerald *(6 outlets; 6 ft cord)* 39.
Sapphire *(3 outlets; EMI/RFI filtered)* ... 52.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 59.
Epson
FX-85 call
FX-185 call
JX-80 call
LX-80 call
LQ-1500 *(letter quality dot matrix)* call
Hayes Microcomputing
Smartmodem 300 call
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Smartcom II *(communications software)* 89.
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Bernoulli Box *(5-megabyte storage)* .. $1349.
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Microsoft
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Superex Business Software
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Includes subscription, manual, 5 hours of connect time, and monthly publications.
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THE CHECK IS IN THE MODEM



By Tracie Forman Hines

Put your Mac to work on your nest egg — but don't let it keep bankers' hours!



WHEN WAS THE LAST TIME YOU bounced a check? If it's more recently than you'd like to remember, your Mac might be able to untangle your personal financial jungle. Balance checking, automatic bill payment, funds transfers, and access to major financial news services are a few of the services being offered. All it takes is an account with a bank that offers the service, and a modem to hook your computer up via telephone lines with the bank's mainframe computer. The bank provides the software you'll need to dial up the service and make transactions.

Here's a survey of the types and prices of services available to Mac owners. If you've been thinking of opening a bank-by-modem account, use this as a guide to the types of services you might need and how much you can expect to pay for them. Bank-by-modem services vary widely from bank to bank, so before rushing out to open your own account, check your local area banks for the deal that's best tailored to your individual financial needs.

Computer Banking: Evolution in Convenience

The last decade has seen a dramatic redefinition of the term "bankers' hours." It's still common practice to rush out to the bank during lunch hour, fight long lines and aggravated tellers to deposit money, make a withdrawal or transfer cash between accounts; but microcomputers, disguised as Automatic Teller Machines (ATMs), offer a degree of freedom from the tyranny of the 10-to-3 weekday banking schedule.

The computerized banking card, a credit card-sized piece of plastic with a magnetized strip on the back was introduced by many major banks in the mid 1970s. Instead of waiting for the next available teller during regular business hours, bank customers simply walk up to a streetside ATM, insert the


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card, and gain immediate access to their accounts. The ATMs have become so popular that a number of banks have started to pool their mechanical resources, letting customers from many different banks make transactions through the same automated tellers.

Today's competition for customers has forced banks to look beyond ATMs to the ever-growing number of personal computer users. Before the year is out, at least four major bank-at-home services will be available to Mac users in New York City, with similar services simultaneously being offered throughout the country. The cost and types of service vary from bank to bank, although you still can't actually deposit or withdraw cash anywhere.

Home Banking Clicks for Mac Users

Test-marketing of personal computer-based banking services has given way to full-scale offerings. In New York City, banking giants Citibank, Chase Manhattan, Manufacturers Hanover, and Chemical Bank have each unveiled bank-at-home services to owners of most popular computers, including the Macintosh. The Mac programs generally take advantage of the machine's pull-down menus and windowing capabilities, making them easier to use than identical programs for other micros.

How to Hook Up to Financial Services

Financial trends show up first in major areas like New York, but the following breakdown indicates various services that will eventually be available to all. Fees and services will vary from one bank to another, but this guide can help you comparison shop for the best deal in your area. (See "Shopping for a Bank" for details.)

All microcomputer-based banking services require customers to own a modem, often one specified as compatible by the banks' management. Before signing up for a service, check to be sure your modem will work with the system or you could end up having to lay out more than you expected. Banks are often arbitrary in their choices of acceptable modems, so if you've been thinking about buying one, make sure it falls within their guidelines. If it doesn't, you'll either have to lie on the application or find a bank-at-home service that will accept your hardware. Generally, the banks we surveyed tended to prefer Hayes, or Hayes-compatible, modems.

If you'll be doing a lot of Mac-based banking, you might also consider installing a second telephone line exclusively for that purpose.

Sign-up incentives range from discounts on modems and other hardware, to free passwords to computer networks like CompuServe, The Source, and Dow Jones, to discounts on software and peripherals. Of course, these are often included with your modem purchase anyway.

Direct Access: Discounting Dow Jones

Citibank, New York's largest ATM operator, recently expanded its *HomeBase* test-market banking service, which has been serving approximately 1000 computer-owning households in the metropolitan New York area for the last year. The new service, called *Direct Access*, is on-line seven days a week, from 6AM to 2AM. Basic service, which costs $10 a month, offers customers a menu of financial and banking options, including balance summaries, direct payment of bills, recurring bill payment, cash transfers between accounts, linking up accounts to its *Direct Access* service, cancelling a check, setting up or cancelling a recurring transfer or payment and recording a mail-in deposit.

Direct Access also gives subscribers the opportunity to link up to an electronic bulletin board, featuring messages from other users, as well as a rate hotline, a directory of the bank's ATM locations, Citibank's economic forecasts, state-of-the-economy summaries and a direct line to the customers service message board. A "Products & Services" menu lets the user peruse Citibank's various services, including checking and savings; investment and retirement accounts; and credit lines. Signing up for any of these

(continued on page 142)

SHOPPING FOR A BANK

Depending on where you live, you might find that the hardest thing about signing up for a bank-by-modem service will be finding one in your area. Banking laws vary widely from state to state, as does the policy of each individual bank. To find out exactly what's available in your locality, check the ads in the financial section of the newspaper. Banks that offer home computer services tend to trumpet the news to all who care to listen. If there are no ads, a few phone calls should clue you in as to which, if any, offer modem account services. Don't be surprised if the latest computer revolution hasn't made it to your area yet, especially if there are few cities nearby. If that's the case, alas, you'll have to wait.

For those fortunate enough to have competing services available, here are a few checkpoints you might want to consider before signing up for any service:

- *Price*: Will the annual cost of membership be worth the added convenience? Not everyone needs instant access to their accounts, especially if their budgets are already strained.
- *Services*: If you don't plan on buying any stock for the time being, you don't need to pay extra money for a portfolio manager. Likewise, if you play the stock market frequently, look for a service tailored to your needs.
- *Hardware Requirements*: Will the bank accept the modem you currently own? If not, you'll have to pay for a new one.
- *Bonuses*: If you've been debating buying a modem and one of the banks in your areas offers substantial discounts on hardware purchases, the money you'll save on equipment can be applied directly to your connect fees. If you already own a modem and want a free BBS password, look for a bank that offers it as a sign-up incentive.

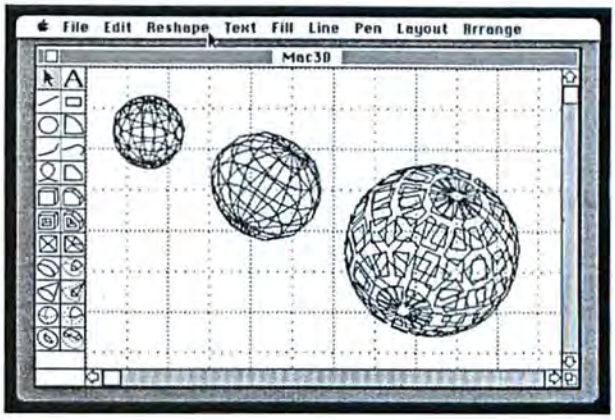
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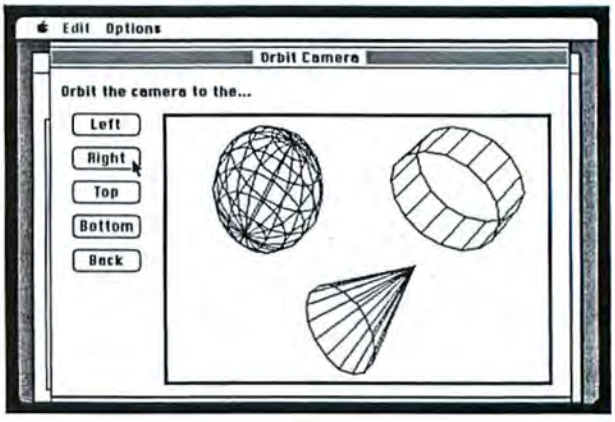
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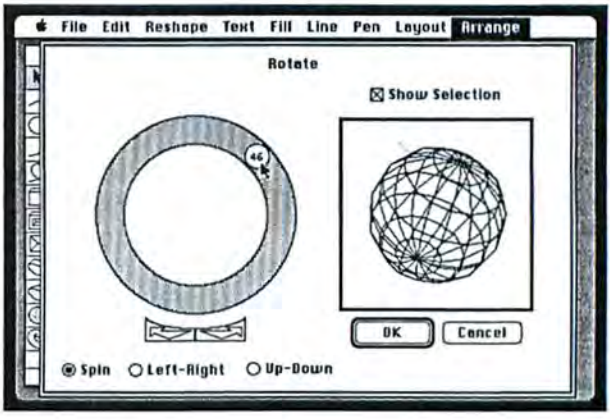
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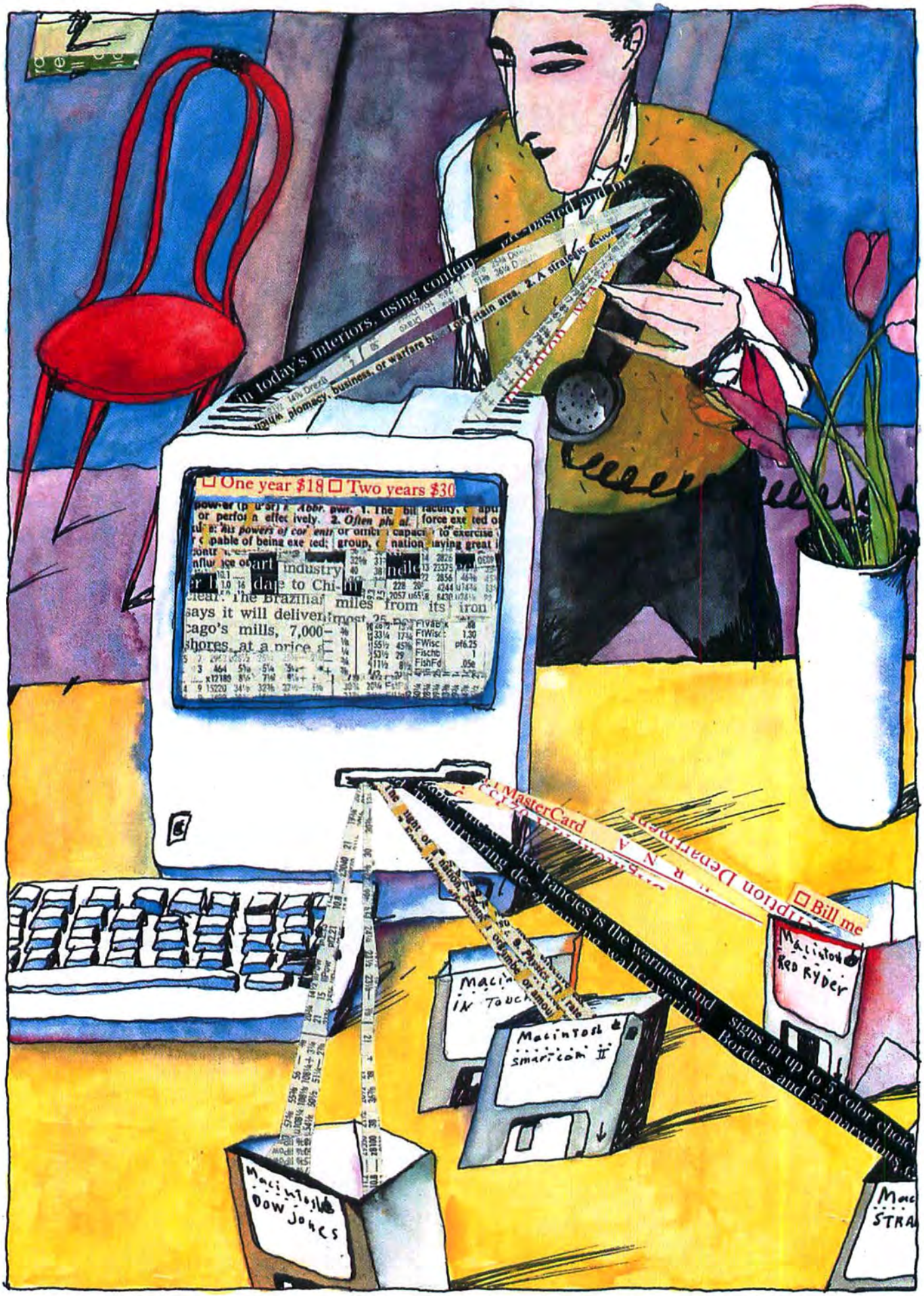
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BLAIR THORNLEY



TERMINAL PROGRAMS YOU CAN LIVE WITH

BY STEVEN BOBKER

Recently joined the Mac modem revolution? Don't keep looking at the thing like it'll bite you. Here's how to pick the software to tame it.

SIXTY PERCENT!!!! NO WAY!

Yeah, it really is.

But, but, but, only 20 percent of all PC owners have modems.

Well, yes, but Mac owners are different, just like their machines. Not only do they want to communicate with the rest of the world, they can and they do.

You've just eavesdropped on part of a conversation I recently had with a good friend, the owner of "another" computer. The astounding percentages we were discussing clearly show the Mac's preeminence as a telecommunication machine. A lot of software developers and publishers were quick to recognize this trend and now Mac owners are faced with numerous programs to choose among when they telecommunicate. And picking the right program can make all the difference between pleasant and effective communication and utter frustration. We're going to first examine the features that users should look for in a communications program and then compare some of the leading programs.

Communications programs fall into two general classes: general-purpose and those designed to emulate (act like) a specific specialized terminal. General-purpose terminal programs can often work in the specialized applications but may be difficult to use and slow (and thus often costly—since in the world of telecommunications you often wind up paying by the minute when you are connected to a commercial database). Specialized programs usually work well with only one or two particular databases or modems. You're sometimes best off using more than one communications program during the course of your work.

Before you start a search for the perfect program delve a bit into the jargon of the telecommunications world—the box on Communication Jargon will translate all of the basic terms you need. After you get comfortable with the language start to make a list of what you'll require. Finally match your list against our chart and product evaluations to pick your perfect program or programs.

WHAT'S NEEDED

Want to emulate a very specialized terminal—say a Tektronix 4014 graphics terminal or an IBM 3278? If

so then the choices are limited to those programs that do the job. Indeed, for some terminal emulators and commercial databases there is no real choice at all. One example is Dow Jones News/Retrieval (DJN/R). Dow Jones' own *Straight Talk* package is optimized for accessing DJN/R and will save you lots of time and money as the most frequently used commands are in the pull-down menus and thus need not be typed in. *Straight Talk* unfortunately is not particularly easy to use with anything except DJN/R.

Some modems (such as Microcom's MacModem) come with their own software. Such software may not be compatible with the vast majority of packages and services that the Mac user will encounter, and is useless for error-corrected file transfers unless you are connected to another MacModem at the other end of the phone line. That's not likely.

The major concern in choosing communications software should always be ease of use. Since ease usually also means speed, the easy-to-use program will be most economical in the long run. Unless your telecommunications are exclusively local or conducted over 800 (WATS) phone lines, the cost of the modem and software will eventually be small compared to the phone and connect-time charges.

Only after a package meets those criteria should you look at the goodies — those features that separate the wheat from the chaff. If you are going to communicate directly with another computer (not by modem or phone line) then the program should be able to support speeds of at least 9600 baud. If you are going to transfer files (as opposed to simply reading data and reading and sending simple messages) error-checking protocols (such as Xmodem, Kermit and Hayes Verification) are an absolute necessity. The ability to redial a phone until connected is crucial if you frequently call busy BBSs. An autologon feature will be a real timesaver for users of commercial services such as CompuServe, The Source and Delphi. Macros and/or a command language can save large amounts of time. Unattended or remote operation support is sometimes needed and some programs can supply it.

SMARTCOM II

This program has excellent balance between ease of use and power. As a general-purpose program it can do just about everything a user would want. Its use of icons is outstanding. It handles all manner of telecommunications with aplomb and always does what is expected. There's not much more you can ask of any program. The recent upgrade (to version 2.1B) fixed most of the bugs in the original release and added MacBinary support.

Smartcom abounds in features. Users running on a 512K (or larger) Mac and connected by a phone to another 512K Mac, can do real-time graphic communications — what is drawn on the *MacPaint*-like Canvas instantly appears on the other person's screen. If you're using a fully Hayes command-compatible modem you have neat animations to watch while the program is dialing and connecting. Other valuable extras that Hayes has included are the ability to simply and easily archive any (or all) the material in its huge screen buffer to either a disk file or the ImageWriter or both, and select either 9- or 12-point type on screen. This is the program for the slightly vision impaired.

Smartcom has several drawbacks. It's a huge program and is slow and unwieldly on a 128K Mac. It does not support macros although its powerful command language somewhat makes up for this deficiency. And it does not always handle the default volume properly — that is, if something has been saved to a data disk and then an Autopilot (command language sequence) that is on the other disk is called, the program will simply fail to find it. The alerts and warnings, while useful, can be so numerous as to be annoying and ignored.

inTOUCH

This very powerful program has all of the expected features and lots of bells and whistles. The basic telecommunications features work reasonably well and are easy to set and modify.

The command language (CCL) is the equal of anything around. Using it, it's easy to write long programs to log you on to a series of remote computers, collect data from each, and then sit back and wait for other computers to call in. Learning CCL is a snap thanks to the excellent documentation and large number of sample programs included on the program disk.

Macros are easy to create but not as easy to use as on, say *Red Ryder* or *Telescape*, since they are shown only as generically labeled on-screen buttons. The buttons should be user identifiable.

inTouch supports Xmodem and Kermit as well as MacBinary. File transfer is remarkably simple and efficient, requiring very few mouse movements and keystrokes.

There is a bug to be aware of. Don't use the on-screen break (BRK) key. In many situations this will disconnect the phone and lock the screen.

Thanks to the excellent documentation, even beginners will soon be communicating at full speed.

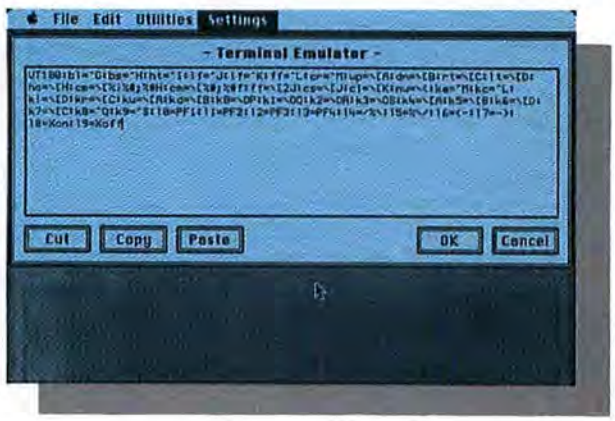


Fig. 1: *Telescape*'s Terminal Emulator Language, shown here emulating the popular DEC VT100 video terminal, can emulate any terminal available now.

RED RYDER 6.0

Red Ryder version *6.0* is the latest in a

series of successful shareware telecommunications packages. [Shareware means that you get the program, try it out (in this case for up to 45 days), and send your money if you like it. (You throw it away if you don't.)] This relatively inexpensive program (along with its earlier versions) has introduced many Mac users to telecommunications. The program has evolved from a *MacTep* (see box) offspring into a full-featured telecommunications package with enough features to satisfy the pickiest of users, who can communicate at a large variety of speeds and settings, ensuring compatability with virtually all remote systems. File transfer protocols supported include regular Xmodem, *MacTerminal*'s nonstandard Xmodem and Kermit. This program was among the first to support MacBinary.

Features include a screen archiving function, multiple sets of macros and "remote service procedures," a full blown command language. *Red Ryder* can also function in a host mode, serving as a mini-BBS.

The program is smooth to use and an absolute pleasure to work with. The documents come on the program disk in *MacWrite* document form. They are very readable and complete.

This version is a large improvement over version 5.0, although one very annoying "feature" is now present. To transmit a control character (a frequent requirement in telecommunications) you now have to press the Option key. This is often confusing when you are switching among programs.

This program is the best telecommunications program for the Mac user on a tight budget.



Fig. 2: This Communications Command Language example will have *inTouch* and the Mac call L.A., Houston, Chicago, New York and Atlanta and get data from each location. The "+transfer" marks the beginning of a subroutine in this very powerful language.

TELESCAPE

Telescape is the most powerful Mac telecommunications program. It can be configured to emulate *any* terminal and has all the advanced features (except unattended operation). Unfortunately its documentation does not adequately explain its features and much of its power will remain locked deep within it. If you are a telecommunications pro or familiar with Unix termcap or *AE-Pro* (an Apple II telecommuncations program) then you may be able to tap the power, but to the average user *Telescape* will be a very ordinary program.

The advanced features of *Telescape* fall into four categories. The command language is called the Macro Command Language and is nearly the equal of anything around. The documentation is, unfortunately, only an introduction to it, and the lack of advanced examples will prevent many users from ever seeing how powerful this language really is.

The Terminal Emulation Language is without a counterpart in any other program. Using this language a user can build up an emulation for any terminal, or customize any of the provided emulations. Here, for example, is where you can individualize the function or macro keys. While creating a new emulation in this language is a job for a pro, Mainstay is committed to helping users (via the telephone and their dedicated BBS) in this task. So if a user must emulate a really oddball terminal, *Telescape* is the way to go.

The Graphics Applications Language lets the user create and send graphic messages. This feature requires both sender and receiver to be running *Telescape* and is quite complicated and of limited utility. Few users will care to make the effort to master this part of the program, but it is there for those who need it.

The mini-BBS or message service built-in can be a boon to users who need a personal electronic mail system. There are two levels of passwords and a sysop (system operator) level. Files as well as messages can be both sent and received. The only flaw in this section of the program is that the files trans-

MACTEP, A MAC LEGEND

The very first Mac telecommunications program did not come from Apple or Microsoft or Hayes or indeed from any company at all. It was called *MacTep* (Tep stands for Terminal Emulator Program) and it came from a basement in rural Massachusetts. And it was free!

Dennis Brothers, contributing editor of **MacUser** and telecommunications expert, got his Mac in January 1984. He soon contacted both Apple and Microsoft in an attempt to discover how the Mac communicated with the outside world. And discovered they couldn't tell him; apparently they weren't sure themselves! So he opened his Mac(!) and using his workshop's instruments traced signals inside until he found out enough to write *MacTep* in *MS BASIC*.

At this point the normal thing would have been to set out in search of a publisher. Dennis, however, took the unusual step of posting his creation in the public domain. The program appeared in February on the Micronetworked Apple Users Group (MAUG) on CompuServe. From there it was picked up and used and modified, spawning children too numerous to tally. And we all began telecommunicating with our Macs. Dennis is presently working on a commercial product that is a direct descendent of *MacTep*.

MacTep (or a variant) is still in the library of most users groups and can still be found on MAUG, but it's a bit crude and pokey by current standards. Still, without it . . . ?

TERMINAL PROGRAMS

X indicates the feature is available; — indicates not available

	InTouch	1stPort	Jazz	MacTerminal	RedRyder 6.0	Smartcom II	Telescape	VersaTerm
Autodial on Busy	X	—	—	—	X	X	X	X
Auto Logon	X	X	—	—	X	X	X	X
Capture To: Memory	X	—	—	X	X	X	X	X
Capture To: Printer	X	—	—	—	X	X	—	—
Capture To: Disk	X	X	X	X	X	X	X	X
Command Language	X	—	—	—	X	X	X	—
Connect To: Printer Port	X	X	—	—	X	—	X	—
Connect To: Modem Port	X	X	X	X	X	X	X	X
Graphics	—	—	—	—	—	X	X	X
Macros	X	—	—	—	X	—	X	X
Protocols Supported: Xmodem	X	X	X	X	X	X	X	X
Protocols Supported: Mac-to-Mac	X	—	—	X	X	X	X	X
Protocols Supported: Xon/Xoff	X	X	X	X	X	X	X	X
Protocols Supported: Others	X	—	—	—	X	X	—	X
Supports MacBinary Format	—	—	—	X	X	X	X	X
Screen Buffer	X	—	—	X	1 screen	X	—	—
On-Screen Timer	X	—	—	—	X	—	—	—
On-Screen Transfer Timer	X	—	—	—	—	X	X	—
Unattended Operation	X	—	—	File receive only	X	X	—	X
On-Screen Help	—	X	—	—	—	X	—	—

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(continued on page 110)

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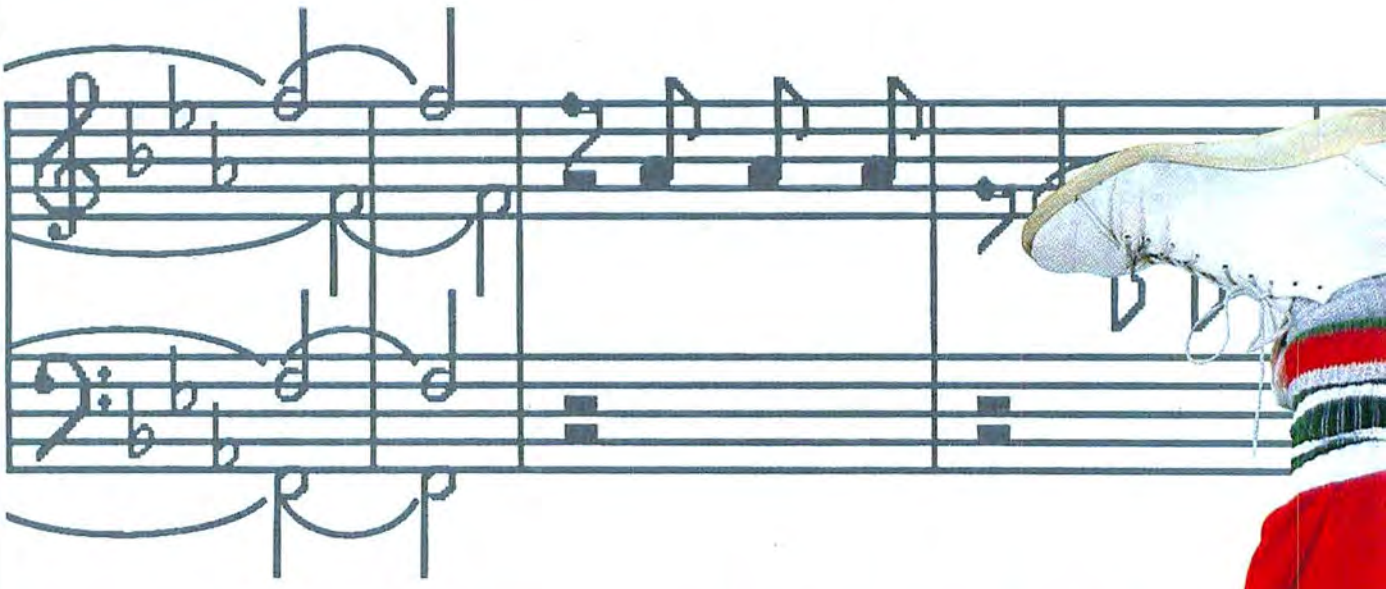
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ROLL OVER BEETHOVEN

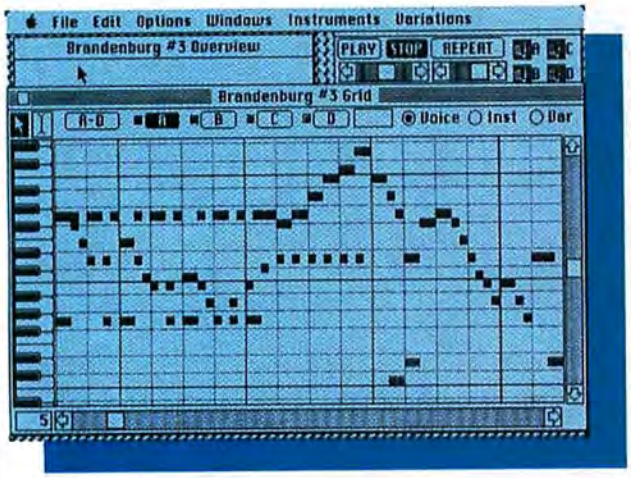


Fig. 1: For the non-musician, The *Grid* window offers a standard piano keyboard for entering music in a non-notational format. The four voices are distinguished by their different "colors."

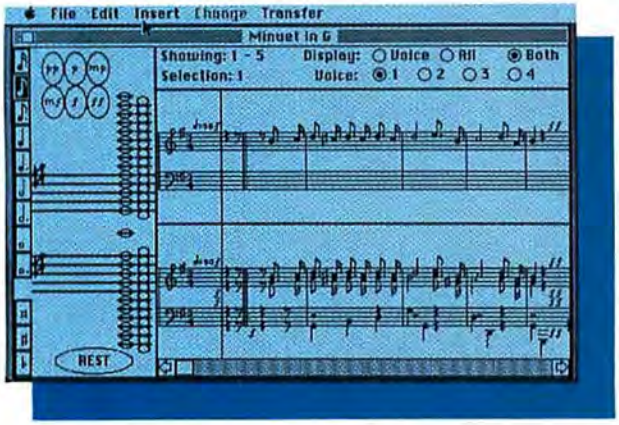


Fig. 2: The *Writer* program displays the full composition in the lower right half of the screen, while each separate voice may be displayed individually directly above.

MusicWorks

MusicWorks, written by MacroMind and published by Hayden Software, was the first commercial Mac music program released. It is primarily intended for the musical neophyte and beginning music student who will not demand advanced notational or sound generating capabilities that a composer might expect in computerized musical software. The program does a good job of using the Macintosh interface, and is truly the most integrated of these three packages.

Music is entered into *MusicWorks* in two ways. The Grid window offers a matrix representing notes as a function of time and frequency. If this sounds confusing, fear not, for on the left-hand side of the window is a vertical picture of a piano keyboard that serves as a reference point (Figure 1). When you click the mouse on a point in the grid, a small box appears; it represents a sixteenth note on the piano key corresponding to the horizontal line on which the note is placed. The four separate voices show up in the grid window as different shades of gray, and it is possible to see the instrument type and sound variations chosen for any voice by selecting the proper button in the upper righthand corner of the window. A unique feature of the Grid window is the dynamic status box to the immediate left of these buttons. As you move the mouse around on the grid, the status box tracks and displays the octave and note under the pointer. This is useful for music students, as they can learn to associate a particular key on the piano keyboard with the corresponding musical voice. The standard Mac editing features (cut, copy and paste) may be used in the grid, and the program also allows you to flip and transpose segments of music in a number of ways (imagine Beethoven played backwards and inverted).

The other method of music entry is direct entry into the Staff window using standard musical notation. Music entered into the grid will automatically generate notation in this window (an important plus). Meter and key signature are selectable, with limits to the variety of tempos that may be used. The program does precise notation entry, keeps track of the relationship of beats per measure, and, in general, takes care of notational housekeeping, so that your can spend your efforts making music, not writing music. *MusicWorks* is a little weak in this area, but it is not intended for professional copyists.

Various instruments, including a piano, trumpet, chime, organ, flute, kazoo, and two synthesizer voices, can be assigned to each voice. The synthesizer waveforms show up in their own windows. Using a pencil-type tool, they can be redrawn. In this way the composer sees and understands the relationship between waveform and sound.

When you play back a song, the individual voices can be turned on or



Fig. 3: When creating a new file, the user can select the format of the staves to be used; up to 40 staves may be specified for multiple parts. Also note the columns of symbols on the right hand of the screen: these are the principle tools in *Professional Composer*.

off, and the tempo may be varied. One shortcoming of *MusicWorks* is that volume changes cannot be made within a composition. This results in a loss of subtle expressive capabilities.

The program prints out each individual voice separately or can print the entire score. Because *MusicWorks* doesn't allow standard notational elements such as beaming, multiple rests and grace notes, the usefulness of printing out your compositions is somewhat limited. Another severe limitation of the program is that the maximum length of a composition is limited to 64 measures, meaning that Holst's *The Planets* will have to put aside in favor of the *1812 Overture*.

The *MusicWorks* manual is well written and to the point. It gets you right into the creative process, and also offers useful tips in getting the most out of the program, as well as explaining the various menus and windows in sufficient detail.

According to Marc Canter, president of MacroMind, an advanced version of *MusicWorks* for the 512K Mac is already in the works; it will incorporate such goodies as an interface to a Casio CZ101 synthesizer and the ability to generate longer compositions.

All in all, *MusicWorks* offers the music beginner the most straightforward and flexible pathway into music and sound on a computer, and is an educational tool that can help teach a beginning music student.

ConcertWare

ConcertWare, by Great Wave Software, was one of the hits of the San Francisco Show. People walking by the Great Wave booth wanted to know what wonderful device was generating the unusual sounds coming from from the small amp and speaker that was playing the full *Blue Danube*.

ConcertWare is three separate program modules, linked by a transfer function that lets you go directly from one to another. The Player module, the Writer, and the unique Instrument Maker (which allows you to create your own instruments) are not copy protected, so all can be loaded onto a RAMdisk for very quick transfers.

The Writer module opens into a window displaying the standard musical staff, as well as a selection of the various notes and accidentals to the left side of the window (Figure 2). Notes are entered by choosing the desired note and clicking on the button corresponding to the position on the staff where entry is desired, or via the Mac keyboard. A cursor is available in the staff section of the window for the selection of an insertion point for a note. This cursor may be used to highlight groups of notes to cut, copy and paste. A single voice may be viewed magnified for editing. Or split the window to see a single voice on the top part of the window while the entire score takes up the lower part of the window. Or simply have the entire score in the window.

Other commands accessible in the Writer module are key signature, meter, repeats, and variable tempo (quarter notes per minute) and there are six volume levels to choose from. Groups of notes, or single notes, may be transposed in increments of half steps and octaves. When printing your music, single voices may be output in magnified form as well as regular size, or the whole score may also be printed.

(continued on page 88)

SOUNDING OFF

The programs discussed in this article all make music—some better than others—but the ultimate goal of all is the making of beautiful sounds. For most of us those sounds come from a 2-inch speaker mounted on the left side of the Mac down towards the bottom. While this speaker produces sound, it leaves a lot to be desired. The Mac's designers realized that the sound generating capacities thay they had built in couldn't really be satisfied by such a tiny speaker, so they gave the sound another outlet: a mini phono plug audio jack on the back panel labeled with a musical note.

Using easily obtainable components music fans can make the Mac sound great. There are several approaches. You can simply get a device called the McNifty Stereo (list: $79.95) from Kette Group International This small amplifier with its two speakers doesn't produce true or even synthesized stereo from the Mac's mono output jack. What it does is splits the highs and lows between the two speakers. Amazingly it sounds great. And the volume it can reach is astounding.

Another way to get the sound out is to purchase a set of the small (and often powered) speakers intended for Walkman-type personal stereos. These range in price from about $25 to over $70 a set. The cheap ones are good enough here.

The only problem you'll encounter in using one of these sets is that the plug is a stereo mini plug, so the sound will only come out of one speaker. The solution is simple: Go into a Radio Shack and get a mono-to-stereo mini jack, part number 274-368, price under $2. Plug this into the Mac and plug the speakers into it. If you leave this plug in your Mac when you unplug the speakers you disable all sound output: no more beeps on startup, or at any other time. This is a boon to those who must use their Macs absolutely quietly.

The next technique is almost too simple: The Radio Shack Minimus 0.3 speaker (part number 40-1250, $11.95 list) fits perfectly into the handle notch at the top of the Mac. Connect to the output jack with a cable that has an RCA-type connector at one end and a mini phono plug at the other. Get the shortest cable you can find since the distance involved is about a foot. The cable should cost no more than $3.

Finally, you can plug the Mac into your stereo if they're close enough. Distances of up to 25 feet work well. Since the Mac only has a mono output simply plug an RCA-type jack to mini phono plug adapter in the Mac, an ordinary speaker cable into that (use whatever length is needed) and Y adaptor into that (assuming that your stereo has standard RCA-type inputs). The Y should be an RCA jack to two RCA plugs and should cost less than $5. The RCA plugs plug into the stereo's auxilliary input, not a phono input.

Since the Mac outputs sound at a fairly high power level turn both volume, and that of any adjustable external units, down before you try them.

ROLL OVER BEETHOVEN

Music can only be entered in notational form. Thus you must know musical theory and music notation. Unlike *MusicWorks, ConcertWare* doesn't provide immediate audio feedback. The composition must first be saved and then played back from the player module. However, this allows your songs to be very long.

The Player program can be used to play back single selections, or a series of songs as sort of a computerized jukebox. Single selections, or groups of songs, may be played repeatedly. The tempo is controlled by a slide bar, but when you open a selection the tempo always defaults to a standard setting. Volume is controlled via the standard Control Panel desk accessory.

A handy feature is the small text panel that describes the selection. These panels may be created and modified in the Writer. Below the header are the four icons that represent the instruments assigned to the four voices. These assignments may be modified in the Player application.

The best part of *ConcertWare* is the Instrument Maker. Great Wave went to a good bit of trouble to be sure that a creative person would have the ability to coax the widest variety of sounds from the hardware in the Mac. The program comes with 34 instruments, including a pipe organ, harpsichord, a wild man(!), and a bee. Even though this selection will be more than sufficient for most people, you can also create and edit your own instruments. Editing uses the Mac interface and features on on-screen piano keyboard.

ConcertWare is very good value for the money. The ability to put its three component programs on a RAMdisk makes up for the fact that the programs aren't integrated, and its sounds definitely take advantage of the Mac.

Professional Composer

Professional Composer, by Mark of the Unicorn, is the software package most likely to appeal to music professionals who earn their living scoring music. The strength of the program is in its notational capabilities; there are almost no sound generation features to speak of (four-voice music is played in a default waveform setting that cannot be modified by the user). But the sheet music *Professional Composer* generates is leaps and bounds beyond the other two programs covered in this article.

A window first appears on the desktop and either a single instrument stave, a piano part (double staff) or a combination of the two is seleceted. A manuscript window is then drawn, and the program is ready to accept data. The Symbols menu provides the pool of notational elements that you use (Figure 3). Tempo can be specified in terms of a metronome setting relative to a note value, and the appropriate Italian term can be used.

The key signature, meter and tempo can now be selected. An instrument label can be assigned to each stave, and while the program has a fairly large selection of instrument names to choose from in a list box, any instrument name may be typed in, just in case a musician is playing a multivoice sampling synthesizer.

Music can be entered from the keyboard. Pressing the appropriate key, while clicking on the stave, inserts a note. A template to fit around the keys on your keyboard is provided.

Staves can be added, deleted or, if you want to arrange a multi-instrument part, they can be constructed separately for each instrument part and then merged. Staves can also be connected, and the pattern in which bar lines connect to staves can be specified. Measure numbers can be shown at every measure, every 5 or 10 measures or not at all.

Full transposition capabilities are standard. Parts may transposed into their appropriate keys, and regions or parts can be transposed into a user specified key or interval.

One drawback is that copying and pasting between two different instrument parts does not work correctly. When you paste a part into a new stave, the part will not be transposed correctly — instead, the program will paste the part into the the same exact position it was in on the origin stave and will always have to be transposed manually.

The printing functions are versatile. You can have the program do separate printouts of the individual instrument parts, or of the entire score. When in print mode, a window with a reduced version of the first page of the score appears. Staves may be added or removed from the score at this point. But lyrics accompanying a score are not always handled correctly. If a stave is removed, the lyrics will not accommodate themselves to the new placement of the music and then must be re-edited.

We have only looked at a sampling of the commands available in *Professional Composer*. The program covers virtually all the notational needs of even the most discerning professional musician.

The manual's first section deals with getting started and becoming familiar with the principal components of the program. The second section is a step-through of all of the commands available. The manual ends with a reference section and complete glossary.

If your aspirations are to make nice noises, this program isn't for you. *Professional Composer* is just what its name implies: a professional tool meant primarily for the working composer and musician.

Coda

So which program should I spend my hard-earned money on? *MusicWorks* is a good tool for the beginner, with instant audio feedback of whatever music is entered in. The sounds at your disposal are a bit crude, and the printed notation could stand to be more precise, but the elegant Mac interface and ease of use more than make up for the deficiencies that the experienced musician would notice.

ConcertWare is for the individual who feels comfortable with written music since writing musical notation is the only way to feed music into the Writer. *ConcertWare* music sounds the best of these three programs—there is a lot of control over the characteristics of the waveforms that can be produced.

Professional Composer is meant for those who demand exacting notational preciseness. The program features the many different notational symbols, tools, and common elements in high-level scoring, but does not take advantage of any of the Mac's sound capabilities. This shouldn't be a deterrent since this program will be most used by pros who have to create sheet music for studio work.

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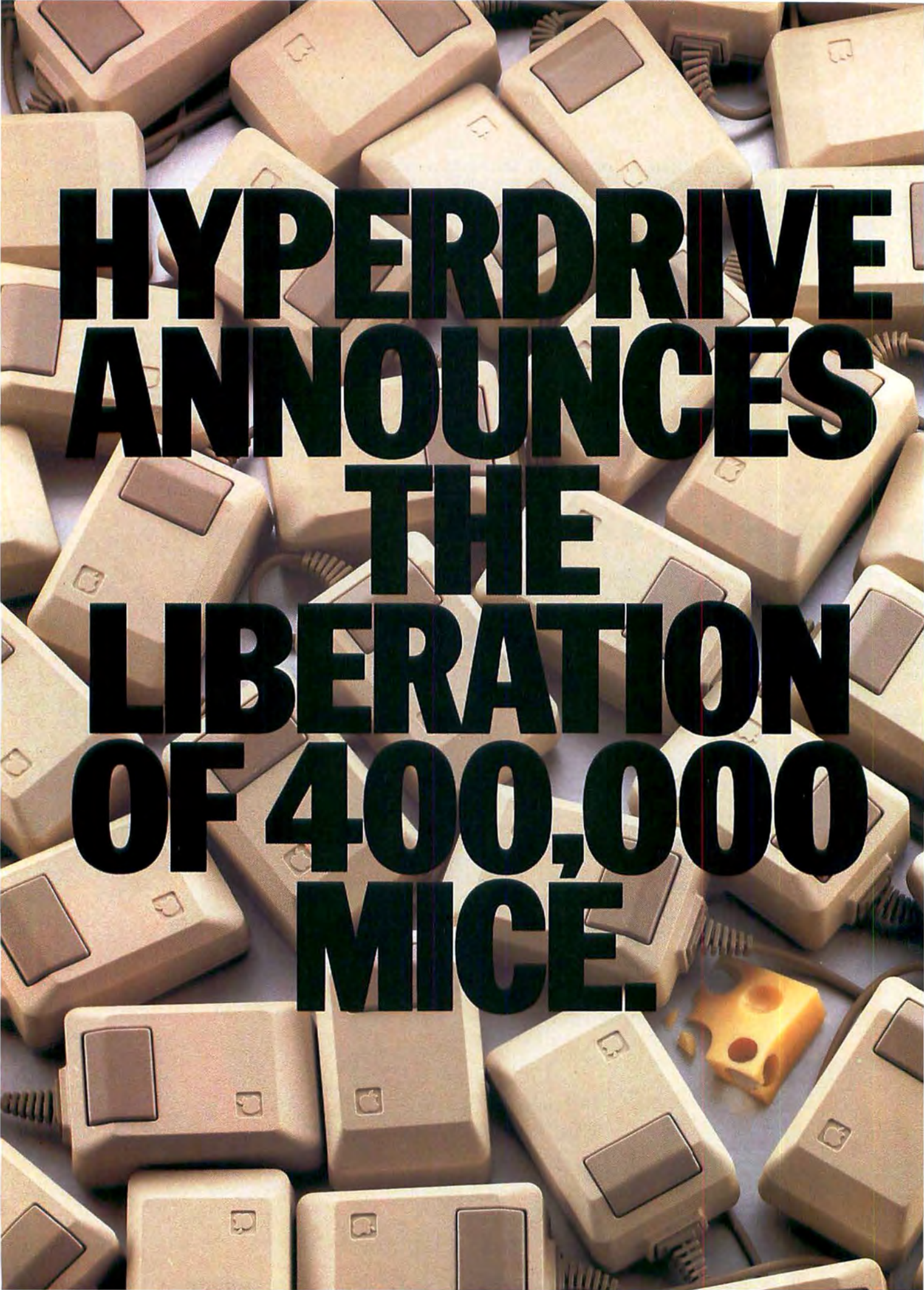
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Unlike all other hard disks, which are external, HyperDrive connects directly to the Macintosh's microprocessor. This gives it an insurmountable lead over external disks—which, since they have to slow down to talk through one of the Macintosh's ports, will forever lag behind.

A FAREWELL, OF SORTS, TO FLOPPIES.

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POWERFUL ENOUGH FOR POWERFUL SOFTWARE.

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But HyperDrive 20 will also run programs that the regular Macintosh, for all its friendliness, lacks the sophistication to handle effectively. Programs such as Lotus' Jazz, for example. And Microsoft's Word. Powerful business software that can multiply a Macintosh's performance and productivity.

HyperDrive 20 also comes with its own software that elevates both the friendliness and the sophistication of your Macintosh.

Such as a backup program, unsurprisingly named Backup, that lets you back up and restore information from the hard disk to and from your floppies.

There's even a print spooler that lets you use your Macintosh for other jobs while your printer is busy churning out the one you just finished.

VAST VS. TWICE AS VAST.

For all its emancipating qualities, there's one item that HyperDrive won't liberate you from. The Apple warranty.

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In fact, the only imaginable problem left unattended by HyperDrive is that of deciding which to buy—HyperDrive 10 or HyperDrive 20.

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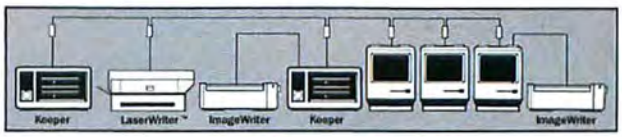
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THE GOURMET'S ICON COOKBOOK

BY BILL STEINBERG

PART 1

Mac icons are getting better and better. Here's how to add your own masterpiece to MacWrite*!*

THE LAND OF ICONS LIES DEEP, within your files. Getting there is not hard or dangerous if you have a good map and a knowledgeable guide. We'll start our trip with a simple task and change the icons in *MacWrite*, an application that already has custom icons. Adding an icon involves four different resources [See "Macintosh Files"] and it's easier to look at and modify existing resources. After we get some practice in this article, next month we'll create a unique icon and put it into an application that has never had an icon before.

Start by putting together a work disk. [See box on "Disk Safety."] Prepare a fresh disk with a small system, the Finder, *MacWrite* (either version 2.20 or 4.5 will do), and ResEdit (use prototype #0.7 or a later version if you can get it). Here we assume that you are using version prototype #0.7.

Before you launch ResEdit, fire up *MacWrite*, and save two blank documents; one in the text only mode, and one in the entire file mode. When you exit *MacWrite*, you will see three distinctive *MacWrite* desktop icons. One is attached to *MacWrite* itself, and there are two different document icons, one attached to each of the sample documents.

Finally you are ready to launch ResEdit; once everything's settled down, you should find yourself looking at a window holding the file names of all the files on your disk that have resources. Double-click on *MacWrite*, and another window will open, this one showing you all the resource types within *MacWrite*.

ICN#—Where the Icon Really Lives

The first resource type we'll look at is the icon list (ICN#). These resources hold the icons that are displayed on the desktop. The "other" icons, those that a program displays while it's running, are usually stored in ICON resources. ICN# resources differ from ICON resources in the number of icons they contain. ICN# resources have a second icon (called the mask) in them. The Finder uses the mask when it inverts the icon.

ResEdit knows about icon lists, and will present you with a special window to edit the icons. Double-click on the ICN# in the *MacWrite* window. A small window will open with three icons displayed, the two document icons and the application icon. To start double-click on the application icon. The icon-list editor window will open. Reposition this new window by dragging it until you can see the entire window (Figure 1).

The top part of the editor window holds a FatBits representation of the icon and the icon mask. The bottom part of the window holds a display of two groups of three icons. The first

BART GOLDMAN

A GOURMET'S ICON COOKBOOK

BE SAFE, NOT SORRY

Hacking around with the innards of a Macintosh application is not something to be taken lightly; ResEdit has the power to *totally* mess up your files. (Read that last sentence again!) Make sure that you are working on *backups*, not on originals; there is no reason for you to have to look down at a tear-stained keyboard while ripping out your hair. Don't take the chance of trashing a file (or disk) that you have no backup for.

icon in each group is a life size view of your icon, the second icon in each group is what the icon looks like when it's selected, and the third is the pattern and shape of the mask that is overlaid when the file is not available. The lefthand group shows your icons over a white background, as they will appear in a window on the desktop; the righthand group shows your icons as they appear over the currently selected background pattern, as if they were on the desktop. The lower (life size) icons are for display only, you can't edit your icon there. The actual editing takes place in the upper window.

Let's edit *MacWrite*'s application icon. Start by removing the lines that represent text. Work in the large window exactly as you do in FatBits. As you click on each black dot, it will go away, and the four life-size icons will be updated as soon as you let go of the mouse button. You can add material as well as remove it; try putting your initials where the text was (Figure 2).

Though the ICN# editor only has a pencil tool (no automatic rectangles or text), that's enough to do all your editing and creating. When you get through exploring simply close the editing window by clicking the close box at its top left.

Note that the icon-list window (Figure 3) shows your new application icon in place, instead of the old ones. Now edit each of the document icons. Close the icon-list window now, leaving the *MacWrite* window as the topmost (selected) window. Most of the fun of creating your own icons will happen in the icon-list editing window. The rest of the resources are

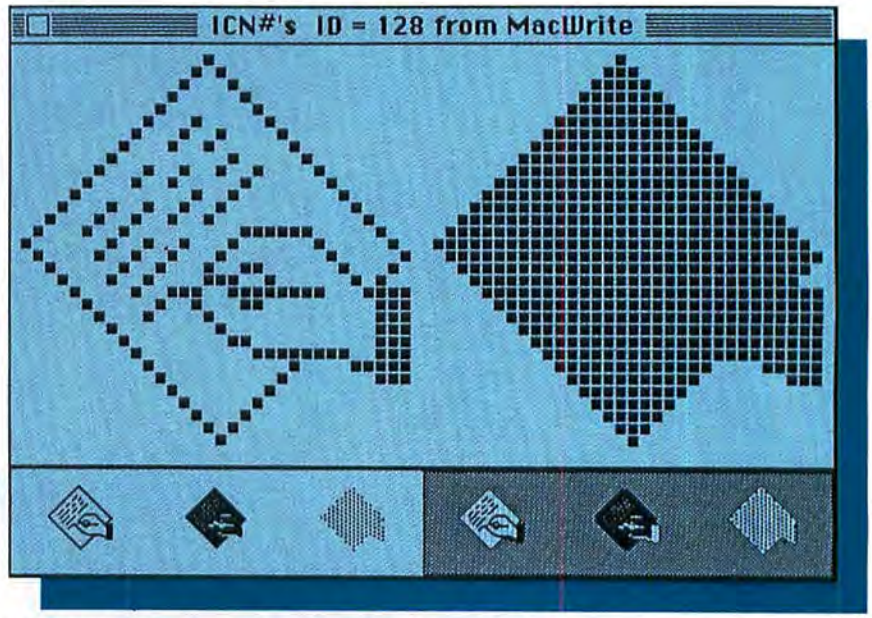


Fig. 1: The icon-list editor window of ResEdit prototype #0.7. This is the standard *MacWrite* icon. The top part of the window is the working area, which is like the FatBits option of *MacPaint*. The bottom sections show the icon, its mask and its "not available" image against both white and patterned backgrounds.

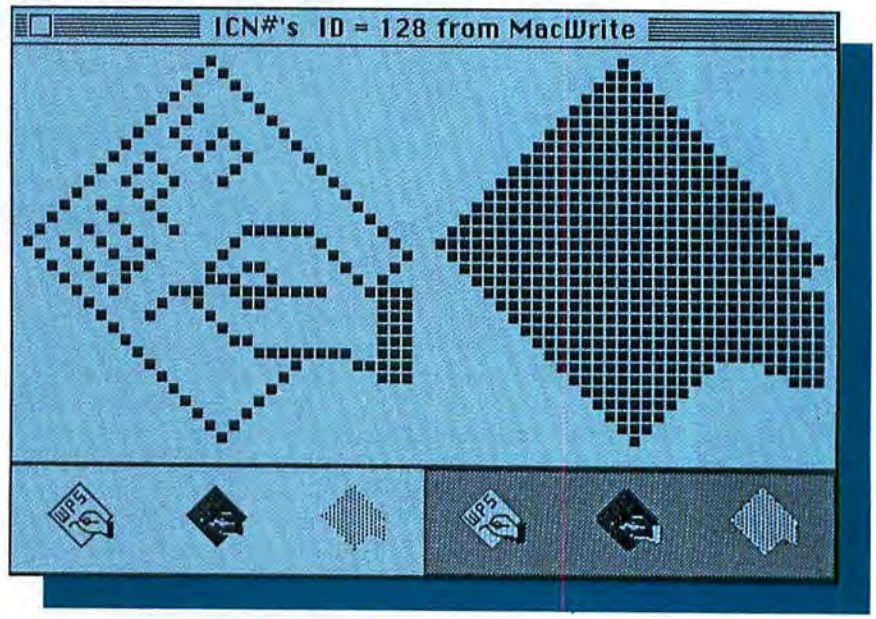


Fig. 2: The icon-list editor window after I changed the lines at the top to my initials. Editing is done by pointing the cursor at a pixel and clicking the mouse. Black pixels turn white and white pixels turn black. It's easier to start by erasing the area to be modified and then adding the new material.

there to support the displaying of the icon list, and deal with numbers and cross-reference lists.

Whenever you decide to close the *MacWrite* window or exit ResEdit you will be asked if you want to save the changes you made to *MacWrite*. If you answer NO, all your editing efforts will be forgotten; if you answer YES, your editing changes will be saved. However, you will not be able to see the new icon on the desktop yet. We have changed the icon list in the application (*MacWrite*), but we haven't removed the original version that is being stored in the DeskTop file. Because the Finder has a good copy of the old version to display, it will not pick up the new one. Now we'll see how to fix that.

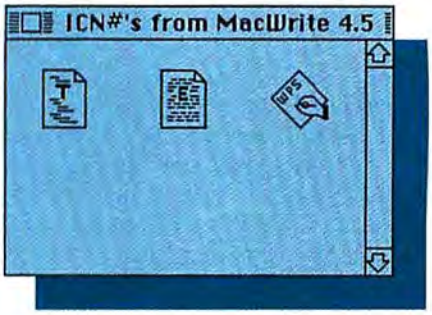


Fig. 3: The Icon-list window, showing the newly created icons.

FREF—Which File Gets Which Icon

The next resource type we will look at is called a file reference (FREF). Remember that *MacWrite* has three different icons? We can easily tell which one belonged to *MacWrite* itself (the characteristic hand over the diamond), but unless you are very familiar with *MacWrite*, you can't tell which document icon belongs with which document type. The FREF is there to tell the Finder which icon goes with which filetype. *MacWrite* has a filetype of APPL, and two document types, a text only version (fileytype TEXT) and an entire file version (filetype WORD). The FREFs map the four-character filetypes to local icon ID#s. There will be one FREF for each filetype, so since *MacWrite* has three ICN#s, there should be three FREFs. Let's see; double-click on the FREF line in the *MacWrite* window. You should now be looking at the *MacWrite* FREFs. There are four of them (Figure 4).

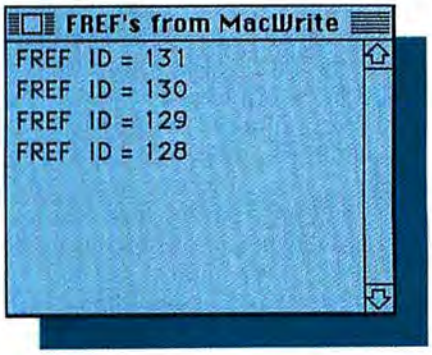


Fig. 4: FREF or file reference resources. FREFs tell the Finder which icon goes with which resource. FREF ID = 128 is asscoiated with the application icon. FREFs 129 and 130 are associated with the document icons. FREF 131 is not used by the finder.



Fig. 5: Inside FREF 128. The information that the Finder uses is contained in the File Type and icon localID fields.

How come four and not three? Well, a little known and never implemented feature of the Finder associated with FREFs was supposed to allow a developer to be able to specify a filename in one of his application's FREFs, and when the user used the Finder to copy the application to another disk, the file refered to in the FREF was supposed to automatically be copied to the new disk too. Anyway, the FREFs numbered 128, 129, and 130 are the three that cross reference our filetypes to local icon list numbers. 131 is the unused one.

Let's take a quick look at what's in a FREF. Double-click on FREF ID# 128. When the window opens up you should see something like Figure 5. The info we want is contained in the first two fields (filetype APPL and local ID#0). If we open up the other FREFs we will learn from FREF#129 that filetype WORD corresponds to local ID#1, and FREF#130 tells us that filetype TEXT corresponds to local ID#2.

These numbers don't give us quite enough info yet, though. To finish the job, we must find the map that tells us the actual resource number of each icon; right now we only have the local resource numbers. The final connection, is a map that connects the local ICN# resource number from the FREF to the actual ICN# resource number that exists in our application. This map is found in the info stored in the bundle (BNDL) resource. But first we need to make a brief stop (just like the Finder) at the version resource.

The Version Resource — Where the Finder Checks First

The resource name of the version resource is different for every application. The version resource's type is the same as the creator name. Since *MacWrite*'s creator name is MACA, our version resource type is also MACA. Double-click on the MACA resource in the *MacWrite* window, and a window will open showing you that there is one resource of type MACA, with an ID# of 0. If you double-click on MACA #0, it will open to a window with a data (hex) display in it. The version resource can contain anything (or nothing); it is there strictly for the Finder's use, and the actual contents of the version resource are unused. Though the local ID# of the version resource is mapped in the bundle resource, the version resource plays a small part in the displaying of the desktop icon. The Finder uses the version resource to save time. If there is no version resource in the DeskTop file, the Finder assumes there is no desktop icon and doesn't bother to search all the BNDLs, it simply displays the generic icon.

(continued on page 98)

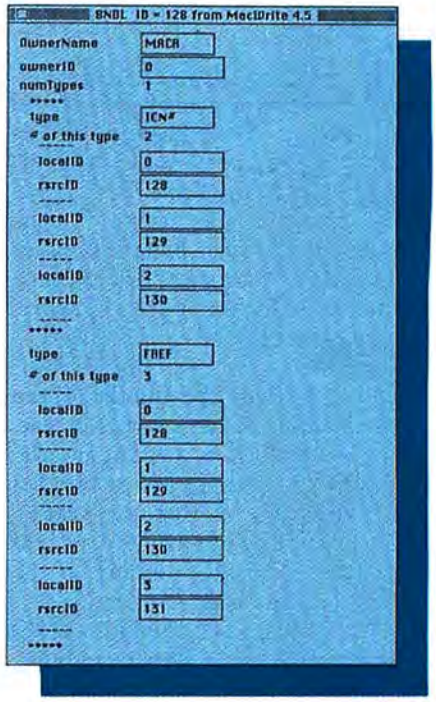


Fig. 6: Inside a bundle (BNDL) resource. The OwnerName is the same four-letter group that is the version resource name. This is also konwn as the creator. numTypes indicates how many resources are in this BNDL maps. Since zero counts as one type, this number is one less than the actual number of resource types. The rest of the figure shows the two resource maps. These are the actual maps used to show the right icon with each document.

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BNDL—Tying Loose Ends

At last we come to the BNDL resource. Close the MACA windows, and double-click on the BNDL resource type. Another window opens up, this one showing us all the bundles in *MacWrite*, along with their resource ID numbers (Figure 6). *MacWrite* has only one bundle, and its ID# is 128.

Now double-click on BNDL 128. The first field in the bundle is the OwnerName. We can see the OwnerName in *MacWrite* is MACA, and the ownerID (the next field in the bundle) is 0. This tells us that the version resource must be of type MACA, and that the resource ID number of the MACA resource is 0. The next field in the *MacWrite* BNDL is the numTypes field, which tells us how many resource types the bundle will be mapping. Zero counts as one resource type, so the value in numTypes is one less the actual number of resource types. (If there are two types of resources mapped in this BNDL, the value in numTypes will be 2 − 1, or 1.) The *Macwrite* BNDL maps two resource types, the icon list (ICN#) and the file reference (FREF), so the numTypes field contains 1. Next is a row of 5 asterisks, and then the first type field, which contains the type of the first resource mapped in this bundle. In *MacWrite*'s bundle the first resource type being indexed is the icon list, and the type field contains ICN#. The next field, "# of this type", tells us that there are three icons associated with *MacWrite* (like numTypes, # of this type contains 1 less than the number of this type; there's a 2 in this field so there are three icon lists).

Cleaning the DeskTop File

Since the Finder uses the resources in the DeskTop file to display the icon, just changing the resources in the application is not enough. The way to get our icons to show up is to replace the old icon information in the DeskTop file with our new information in the application. We can let the Finder do it for us. There is a Finder command that causes a complete rebuild of the DeskTop file. If you hold down the Command and Option keys while the Finder is logging a newly inserted disk, the DeskTop file will be rebuilt. The Finder will ignore everything in the DeskTop file and reconstruct the DeskTop file by copying the appropriate resources from the applications. If you haven't "prettied" up the desktop, and you have no folders, then this method is definitely the easiest. On the other hand, if you have taken the trouble to set up your desktop just the way you want it, you'll want to use the second method. If we use ResEdit to remove the appropriate resources from the DeskTop file, the Finder will replace them for us. The resources we need to remove are the four resources needed to display a desktop icon (surprise!). Because the version resource can be almost any type, it is easier to identify the non-icon-related resources, and then remove everything else. There are three non-icon-related resource types currently stored in the desktop file: a STR type, a FOBJ type, and sometimes a FCMT type. If we leave these resource types in the desktop file, and remove the rest, the Finder will reconstruct the desktop using the current resources on the disk. Launch ResEdit again, and double-click on the DeskTop file; it will open to a window containing all the resource types, just as any other file that has resources will. Use the clear command from the EDIT menu, and remove all the icon-related resources. Close the desktop window (say YES to save changes), and exit ResEdit.

There's your new *Macwrite* icon, and you built it yourself!

The next challenge is to design a new icon for an application that has never had an icon of its own before. Next month we'll explain that and, meanwhile, have fun cooking with the Resource Editor!

When an application has documents, the documents have distinctive desktop icons, and these icon lists are also stored within the application. Each different file type has its own distinctive document icon. Each of the three icon type fields has two entries, the first holding the local ID and the second holding the resource (rsrc) ID. We need this to complete the link we started with the FREF earlier. The final resource indexed in our *MacWrite* bundle is the FREF. The format of the FREF index is a local ID# and a rsrc ID#. We don't need the indexing info for the FREFs, though an application might.

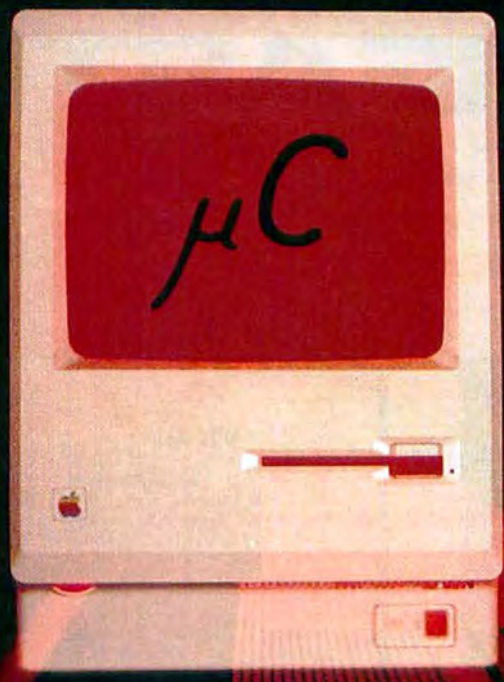
It's time to make any final changes, exit ResEdit, and. . . . The icons are all unchanged! We didn't fix up the DeskTop file! (And it didn't forget!).

MACINTOSH FILES

A Macintosh file is not like a file found on other computers. A Macintosh file can have two parts, each called a fork. One is called the data fork, and the other is called the resource fork. The data fork can contain anything, and is not necessary in an application; The resource fork can only contain resources. A *MacWrite* document, for example, is mostly data fork information. *MacWrite* itself is resource fork information. A minimal Macintosh application must contain at least CODE resources. The first CODE resource (ID#0) contains a map that the system uses to find the entry points into the other CODE resources. The other CODE resources (ID#s 1 and up) contain the code that executes when you run the application. While a minimum application may contain only the CODE resources, typically an application contains many resources of many types. If the application has menus and windows, for example, the information about their structure will (most likely) be in the resources.

GETTING RESEDIT

ResEdit is available from many sources. It is an Apple Computer developer's tool and prototype #0.7 can be found in the June 1985 Software Supplement. The latest version can also be found in MAUG's Macintosh User Data Library 3 ("GO PCS23" on CompuServe). Various versions can also be had from the libraries and bulletin boards of many user groups. It is free.



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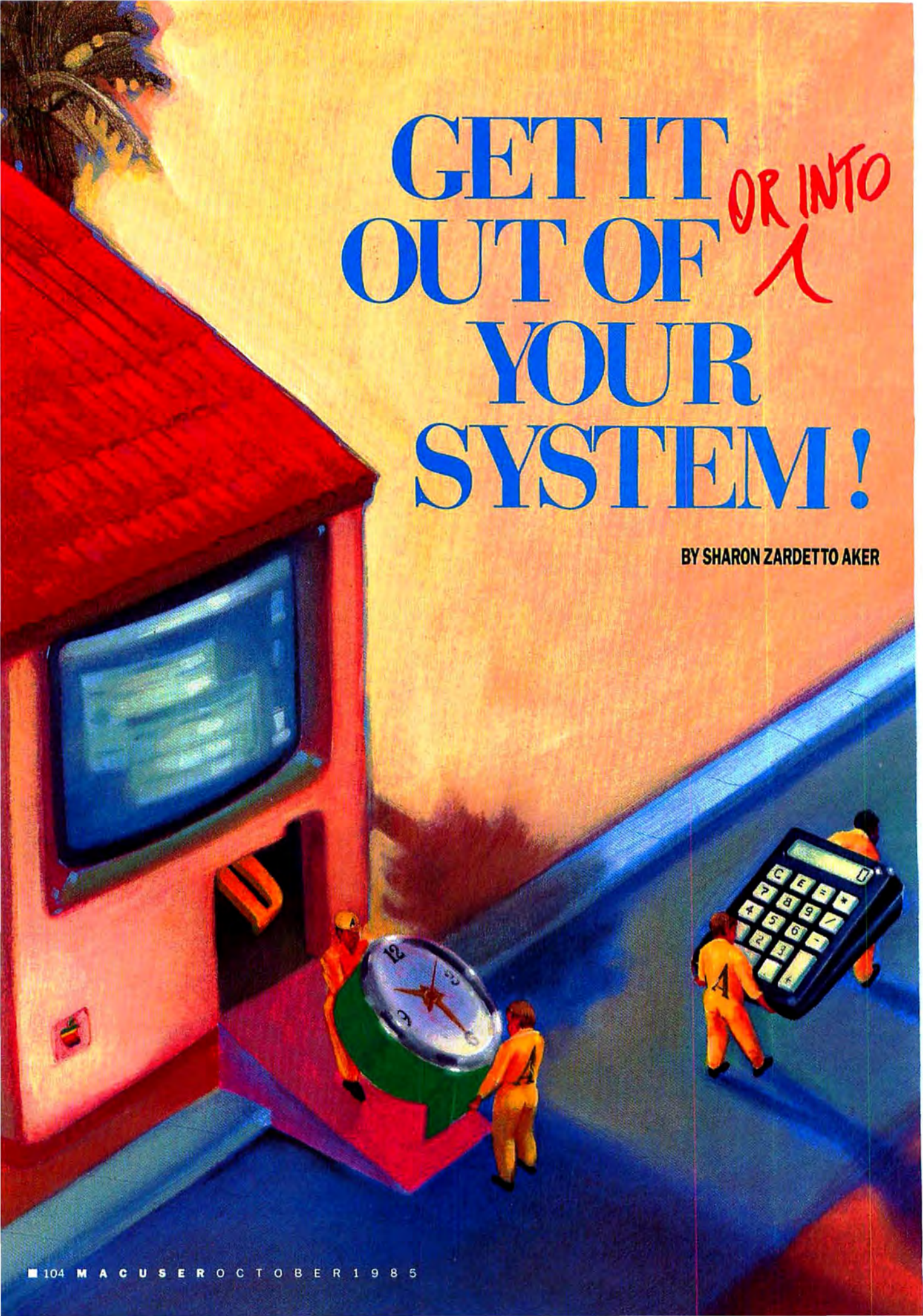
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GET IT OUT OF (OR INTO) YOUR SYSTEM!

BY SHARON ZARDETTO AKER



Go font crazy, add a few desk accessories, or make your System lean and mean.



WHEN YOU TURN YOUR MAC ON, IT displays a disk icon with a blinking question mark. It's asking you to insert a disk, but not just any old disk — it wants a *start-up disk* to get it going. A start-up disk can have any application on it, or no application at all, but it there are two things it must have: the *System* file and the *Finder*. You'll find the icons for both in the System folder on your desktop.

The Finder gives you your desktop. On the desktop are the icons, pull-down menus, Trash can, disk handling and viewing options. The Finder (and therefore the desktop) has gone through some changes since the Mac was released. The latest version of the finder is numbered 4.1 (you can see which version you have by selecting

GET IT OUT OF (OR INTO) YOUR SYSTEM!

About Finder under the Apple menu when you are on the desktop). Eventually the Finder will be built in to the hardware of the Mac and you won't have to keep it on a disk at all.

The System file contains information that the Mac uses all the time — whether you're on the desktop or in an application. While only Apple can change the Finder, you can alter the System file yourself. Such alterations have a twofold benefit: your System will contain the things that you need for your specific applications, and you can wind up with more space on your disks. The two main things that you can change are the desk accessories and the fonts that are "installed" in the System.

Desk Accessories

We're not going to take a tour of the desk accessories here; you're probably pretty familiar with them even if you've only had your Mac for a few weeks. You should understand, however, that the accessories — or the programs that make them work — are hidden in the System file. The Scrapbook and Note Pad icons that you see when you open the System folder are only the "data files" associated with those two accessories; that is, they contain the data, or information, you have stored in those accessories. You can put these icons in the Trash, and the accessories will still be available from the Apple menu. If you select the Note Pad or Scrapbook after the related data file has been trashed, it will be empty and a new data file will be created on the desktop.

Although you can't see them, the desk accessories take up a good deal of room on the disk. They account for about 28K of the System file. Here's a list of their individual sizes (1024 bytes make a K, or kilobyte):

Accessory	Bytes
Alarm Clock	4008
Calculator	2444
Control Panel	7951
Key Caps	1645
Note Pad	2512
Puzzle	932
Scrapbook	3109

Now, the Puzzle may be fun, and it may even be worth 1K, but if all your controls are set, you don't need the Control Panel; perhaps you never use the Note Pad, or the Alarm Clock, or Key Caps. Wouldn't you rather have the extra space on your disk?

It's easy enough to remove the desk accessories you don't need, and you can save them and put them back any time you change your mind. And, there are dozens of different desk accessories available just waiting to be installed. These accessories range from fun items, to handy utilities, to entire desk management systems; some are available commercially, while others can be obtained through user groups.

To juggle your desk accessories, all you need is Apple's new utility, the *Font/DA Mover*. Prior to June 1985, System disks came with the old *Font Mover* only; if you don't have the new utility, check with your local Apple dealer. Before we discuss the Mover, though, let's take a look at fonts.

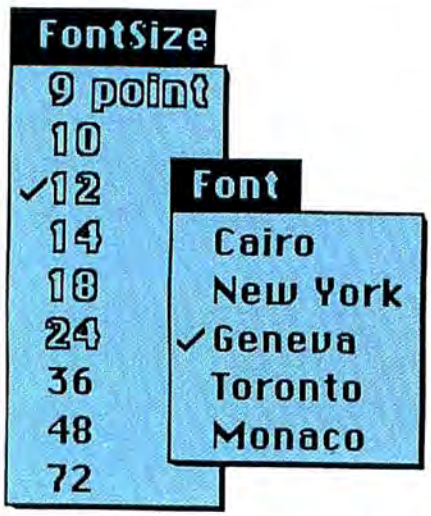


Fig. 1: The fonts and sizes available from most applications show on menus; the outlined numbers are the sizes actually installed in the system. Although you can select the solid numbers, the characters in those sizes will not be perfectly formed.

Fonts

You may have noticed that the fonts available vary from one application to another; not only the fonts themselves, but the sizes they come in may change. Fonts, too, are stored in the System file, and you can add or remove them whenever you want. Every size of each font is "installed" or removed separately.

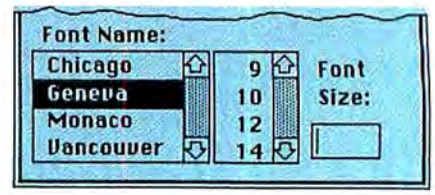


Fig. 2: Some applications, like *Word*, present a window with installed fonts and sizes to choose from. To select a size that is not installed, you can type it in the box.

How can you tell which fonts and sizes are installed in an application? Any program that gives you a choice of fonts will list them in a menu (like *MacPaint* and *MacWrite)* or a window (like *Word*); the available sizes are listed separately. When font sizes are on a menu, the ones that are listed in outlined style are the ones that are installed. In an application like *Word*, the installed sizes are listed in a scrolling window.

While you can't access a font that is not in the System, you can select a size that is not installed. When you choose an "unofficial" size, the Mac creates it from one of the installed sizes; as a result, the letters are distorted, with thin and thick areas and jagged curves.

The Font Table shows just how much room the standard fonts and sizes take.

Before you start shuffling your fonts around, keep in mind the following:

• The "System Fonts" must be left in the System file. These fonts, marked with an asterisk in the Font Table, are the ones the Macintosh uses for its menus, dialog boxes and on the



Fig. 3: Selecting a size not installed gives distorted characters.



Fig. 4: Word uses the upper case letters from two font sizes in its Small Caps option.

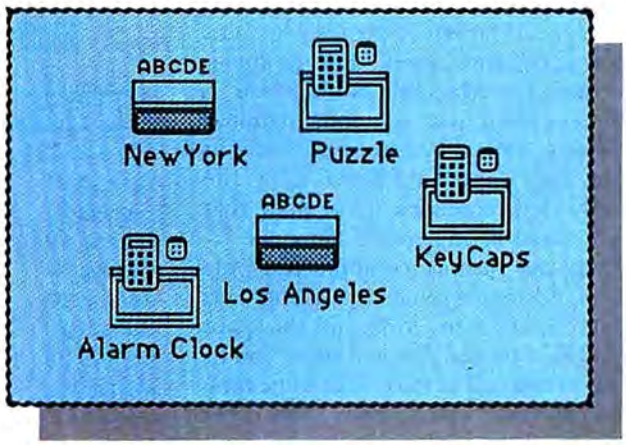


Fig. 5: Each font or accessory file you create has its own icon on the desktop.

desktop.

• If you are going to do high-quality printing, you should keep a fontsize twice that of the one you want to print. New York-12, for instance, wants to use New York-24 as a "map" when it prints in high-quality.

• The "Small Caps" option in *Word* needs the upper-case letters from two font sizes. For example, if you choose 14-point Small Caps, they use 12-point caps for all unshifted letters; likewise 12-point Small Caps uses 10-point caps for unshifted characters.

The Font/DA Mover

The Font/DA Mover is just that—it lets you move fonts and desk accessories in and out of your System file. Before they are deleted from the System, you can copy them into another "file": a System on a different disk or a separate storage file. (A "file" is simply information on your disk; applications and documents are types of files.)

You can store a group of removed fonts in one file, or store each one in its own file. When you create a file to hold a font or desk accessory, you will have a new icon on your desktop. This icon can be copied to another disk; the original can be Trashed, leaving you with some extra disk space. The same goes for desk accessories: you can create a file and title it, say, "Leftovers," or one each for the "Puzzle," "Key Caps," and "Calculator."

When you open the Mover, the first thing to do is click in the Font or the Desk Accessory button. The left window will list the items already installed in the System on your disk.

To remove something from the current System, click on it, and then on the Remove button. But, before you remove it—make a copy. Click on the Open button beneath the right window. Click in the New button, and type the name of the "storage file" in the dialog box that appears: "Extra Accessories" or "New York, all sizes." Click in the Create button to create the new file. Now, select from the left window all the items you are going to copy. If you select a single font and size, a sample will appear on the screen; whether you select a single item or multiple ones (by dragging or shift-clicking), the total number of bytes your selection takes will be shown. Next, click in the Copy button, and the selections will be copied into the new file.

One warning is in order here: Always leave at least one desk accessory in each System file. *As soon as you remove the last desk accessory you have destroyed that disk!* The Mac will never be able to read it again.

You can also transfer something directly to a System file on another disk, or into a previously created file, by opening that file instead of creating a new one.

To put fonts or accessories back in the current System, use the same procedure, but in reverse: open the file in the right window, and copy it to the left one. When you put new items in the system, they will be added to the appropriate menus; the latest addition will always be on the top. Like every other operation on the Mac, System alterations are much easier if you're working with a two-drive system.

With the Font/DA Mover, you can customize each of your applications. Perhaps you want the Cairo picture font in *MacPaint*, but want Los Angeles installed in *MacWrite*; maybe you need Toronto in *Word*. You may not need the calculator in *MacPaint*, but you can use it in *Multiplan*, where you never need Key Caps. If you have a customized System file that you want to use with another application, you can simply drag the System file icon onto that disk instead of making the alterations again.

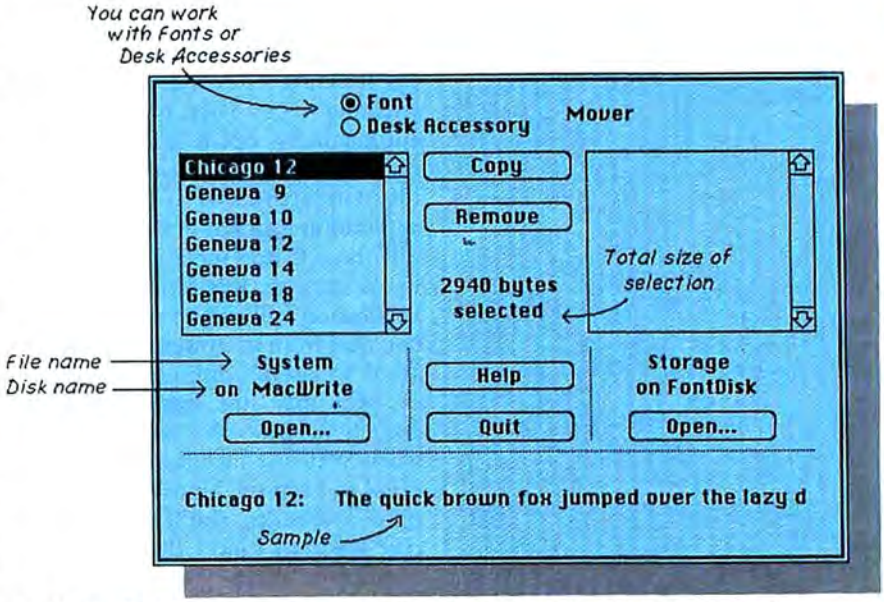


Fig. 6: The Font/DA Mover lets you install and remove fonts and desk accessories.

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GET IT OUT OF (OR INTO) YOUR SYSTEM!

A good idea is to make ideal Systems for each application. For example, writers for **MacUser** could create a system with just the four required System fonts (the asterisked fonts in the Font Table) and Key Caps as the only desk accessory (remember that you need at least one). Since we require our authors to submit text-only files, nothing is gained by writing your piece using many fonts and the space you save on the disk will allow you fit an extra article or two. Take some time to analyze which fonts and desk accessories you use with each application. You can increase the performance of many applications by teaming them with their ideal Systems.

Owners of an external drive (or a hard disk) have another option. They can create very large System files (the sky's the size limit on a hard disk) and then start up the Mac with this super System disk. Then applications are run off their own disks which do not have a System or Finder on them. This technique is for those who use many fonts and who like to have the fulllest possible set of desk accessories a mouse click away.

Another System Change

Another System file alteration is made when you choose "Set Startup" from the Special menu on the desktop. The Set Startup option lets you bypass the desktop; if you have selected *MacWrite* as the start-up application (by selecting it on the desktop, then selecting Set Startup), *MacWrite* automatically opens when you use that disk as the start-up disk. The identification of the start-up application is stored in the System file.

If there is no Finder on a disk that has a start-up application on it, the application will still be opened; when you quit from it, however, you will be asked to insert a disk with a Finder—or, you may just crash the system entirely. (How old was your Mac when you first met the bomb?) It is easier to keep the Finder on the start-up disk; besides, you'll need it if you ever want to cancel the Set Startup command. When you quit an auto-start application, you will be returning to the desktop.

FONT TABLE

Font-Size	Bytes
Chicago-12*	2940
Geneva-9*	2152
Geneva-10	2200
Geneva-12*	2734
Geneva-14	3568
Geneva-18	4864
Geneva-20	5848
Geneva-24	7568
Monaco-9*	2026
Monaco-12	2464
Toronto-9	2200
Toronto-12	3034
Toronto-14	3658
Toronto-18	5688
Toronto-24	8854
New York-9	2032
New York-10	2200
New York-12	2734
New York-14	3352
New York-18	4516
New York-20	5260
New York-24	6832
New York-36	13780
London-18	3268
Venice-14	3604
Cairo-18	5840
Los Angeles-12	2440
Los Angeles-24	6444
San Francisco-18	2984

There is no direct way to cancel the Set Startup; but, you can always set a new start-up. When you're on the desktop, select the Finder and then choose Set Startup again; with the Finder as the start-up application, the first thing you'll see when you insert the disk is the familiar desktop.

Slim System?

The basic System file weighs in at about 150K; with judicious trimming of accessories and fonts, you can pare it down to 100K. Drastic deletions can bring the System file down to well under 60K, although that won't leave you much to work with in the way of fonts or accessories. Once you start experimenting with fonts, or testing out some of the new desk accessories, though, you'll find your System files are fatter than ever — and you'll be back wishing you could pack more than 400K onto a disk.

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TERMINAL PROGRAMS

(continued from page 77)

ferred must be in a text format and require conversion. The program can do the conversion, but file transfer using the message service is not as straightforward as it is with other programs, or indeed is with the main portion of *Telescape*.

Given a key to unlock its power, this program would be among the best of the Mac telecommunication programs. Until then use with care.



Fig. 3: *Smartcom II* highlights each step in its call animation, letting users know the current state of the connection. The telephone's eyes move farther down as each step is completed.

VERSATERM

VersaTerm is a text and graphics terminal emulation program, and a super communications package. It can emulate DEC VT100s, VT102s and VT52s as well as Tektronix 4014 graphics terminals. Also included is a very limited Data General D200 emulation.

Basic communications are simple to set up, due in part to the clear manual, and it is easy to get started with *VersaTerm*. It handles all communications smoothly. Autoredialing and autologon facilities are included and the user can create a directory of frequently called phone numbers. Terminal settings are joined to the phone numbers in the directory so that simply ordering a dial also sets up the emulation requried. User defined commands (macros in other programs) are supported to a limited degree.

File transfer is excellent. File transfer protocols supported included Xmodem and *MacTerminal* Xmodem. The MacBinary standard is implemented.

The VT100 emulation features include full cursor movement, erases, inverse video and line drawing graphics. A Mac numeric keypad used in this mode will automatically emulate the VT100 keypad. The VI and EMACS editors are both directly supported, switching is a simple toggle on a pull-down menu.

In Tektronix 4014 mode the user has a choice of four character sizes and two linestyles (solid and dotted). The full-screen crosshairs are mouse controlled. Other Tektronix emulation features include incremental plotting mode, special point plotting mode (for Plot-10 software emulation) and hard copy requests from the host computer.

The manual is brief but complete and the distributor's support has been excellent. This solid program should be looked at by all power users, especially those with VT100 and Tektronix emulation needs.

1stPORT

1stPort is marketed as a "Multi-

(continued on page 147)

COMMUNICATIONS JARGON

ASCII (American Standard Code for Information Interchange)—A well-known standard format for the data sent between computers.

Asynchronous communication—A data link that does not require rigid spacing or timing between characters.

Autodial/autoredial/autoanswer—Typically modem functions but often aided and abetted by software—allows you to let the electronics do the dialing and actual connecting, not your fingers.

Baud—Roughly the number of bits (NOT bytes) per second that your computer sends and receive data at. Divide by ten to get characters per second.

BBS (Bulletin Board System)—An electronic post office and meeting place.

BinHex—A Macintosh utility that converts between ASCII and binary files, necessary until made automatic by MacBinary.

Bit/byte—A bit is the smallest unit of computer memory, bytes are groups of eight bits.

Connect time—The actual time you're charged for (usually in whole minutes) when hooked up to a commercial database or data service.

Control character—A special ASCII character that causes a terminal to perform an action, such as add a linefeed or ring a bell.

Flow control—A protocol that allows one computer to signal another to start or stop sending data, often called handshaking. Xon/Xoff is the most popular.

Full/half duplex—Full duplex permits two-way simultaneous communication; half duplex allows communication in only one direction at a time.

MacBinary—A new standard method of transmitting Mac files between computers.

Macros—Procedures that automate operations; they consist of groups of actions.

Online/offline—You're online when you're connected to another computer, and (surprise) offline when you're not.

Protocol—An established standard or method of communication.

Terminal—A device that lets users communicate with a computer.

Terminal emulation—Software that imitates (to varying degrees of exactitude) the characteristics of a particular video terminal.

Xmodem—An error-correcting protocol for file transfer between computers. Also known as Modem7 or the Christiansen protocol (after its author).

Xon/Xoff—A protocol that controls the flow of data between two systems.

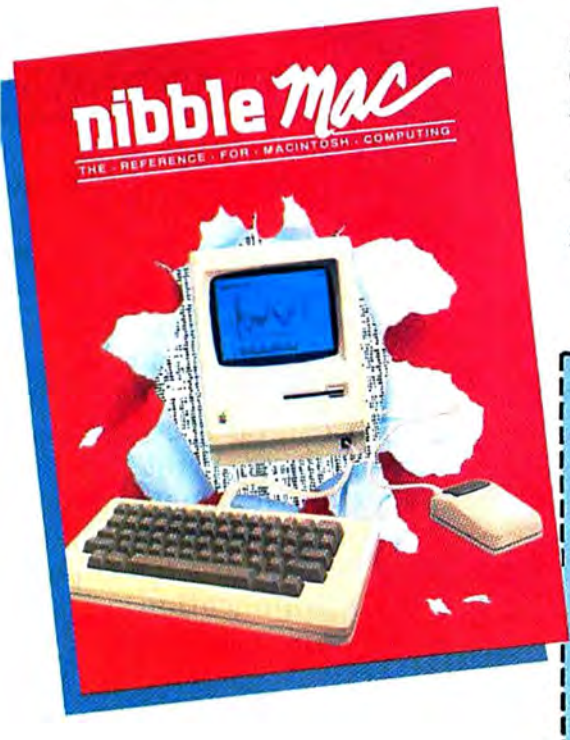


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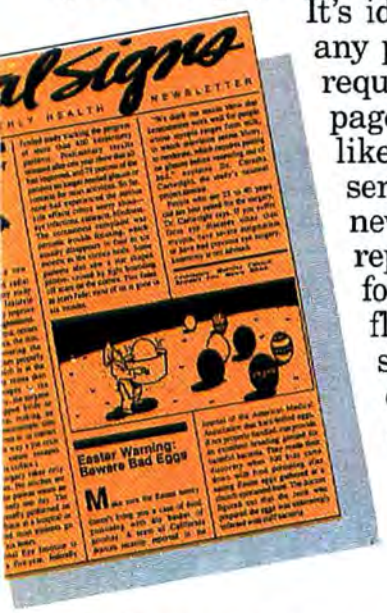
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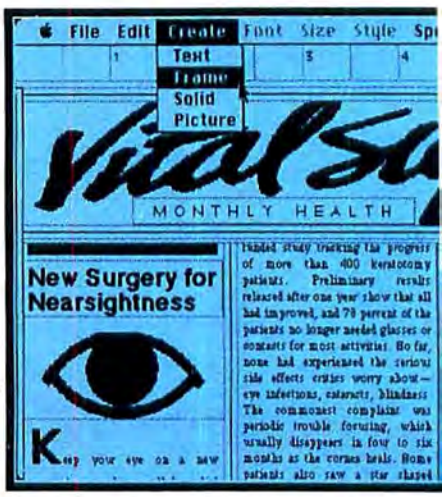


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WORCESTER'S
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THE ART AND CRAFT OF DESK ACCESSORIES

By
Bill Bond
And
Chris Allen

You can't make programming a desk accessory easy—but we've made it logical and clearer then before. Grab your ToolBox and come along.

WANT TO GET IN ON GOODBYE KISSES and all sorts of other wonderful Mac stuff? All you have to do is write a desk accessory, one of those innovative Mac concepts. And we'll show you just how to do that using Apples's MDS 68000 assembly language. In addition to leading you through the desk accessory labyrinth we'll give you the source code for a simple desk accessory called "Show Picture" and tell you how to convert that code into a generic desk accessory shell.

This is going to be pretty technical. To get the most from this article you should be familiar with the Apple's MDS 68000 assembly language, and have a copy of *Inside Macintosh* (either the old Apple-published version or the new version published by Addison-Wesley), and also have a copy of the Resource Editor (available from the developer's Software Supplement, from CompuServe and many user groups).

Understanding Desk Accessories

The most important thing to understand about a desk accessory is that it must co-exist with the application program it is running under. As the host, the application will open the desk accessory, pass appropriate events to it, and even help close the desk accessory. As a guest, the desk accessory must not use too much of the application's memory, must handle the events passed to it, and must clean up its data structures completely before it closes.

A desk accessory is a special type of device driver. The application communicates with the desk accessory via the part of the operating system known as the Desk Manager. Other than when it is first opened, or when it is closed, a desk accessory must wait for the Desk Manager to tell it what to

do. If an application does not properly use the Desk Manager, the desk accessory will not work.

A desk accessory is normally stored in the System file, as a resource of type "DRVR." The resource name of the DRVR is the name of the desk accessory, and the resource number is the desk accessory's unit or ID number. All desk accessories should have unit numbers between 12 and 26. (Note this range is different than that stated in older versions of *Inside Macintosh*.)

The name of the DRVR you create is whatever you want the desk accessory to be called when it appears on the Apple menu. However, by convention, the name should begin with a null character (ASCII Ø) to avoid conflict with file names that have the same name as the desk accessory.

Writing a Desk Accessory

Writing code for a desk accessory is similar to writing code for an application, but there are some major differences.

1. It is important that the grafPort and 68000 registers are saved and restored.

2. A desk accessory should use as little memory as possible. That is why most desk accessories are written in assembly or in an efficient language such as C. Apple recommends that desk accessories should not use more than 8K of code and resources to run reliably on the 128K Macintosh. This is a good guideline to keep in mind even when designing for the 512K Macintosh, as the 512K's extra memory is often used by RAM disks, disk caching programs, *Switcher* or by complex programs such as *Jazz*.

3. Most applications conserve memory by segmenting code. However, you can't easily segment the code of a desk accessory, since the jump table is already in use by the application. This means that you are limited to one code resource.

4. You have to be careful with static variables. In an application they are allocated relative to register A5. A desk accessory must use other mechanisms to support static variables. The two strategies normally employed are: (A) allocate room in the DRVR resource for storage (this storage may be accessed by using PC relative addressing or by setting up one register as a base pointer such as A4); or (B) use the memory manager to create a relocatable or nonrelocatable storage block in the application heap (remember to release this block before closing the desk accessory).

5. Desk accessory code needs be written in a reentrant fashion. That is, the code should be written so that it could, theoretically, be executed concurrently by several tasks. Reentrant code does not modify itself or its own constraints. *You need to treat code and data as though you will return and execute it again immediately.*

SOURCE CODE FOR "SHOW PICTURE"

```
;--------------------------------------------------------------------------
;
; Show Picture DA
; Written by Bill Bond and Chris Allen  May 1985
;
; This desk accessory will display a 'PICT' type resource in its window.
; We can use MacPaint to create the picture, then copy it to the Scrapbook
; by using the Clipboard. The Resource Editor is be used to copy the picture
; from the Scrapbook and paste it into the desk accessory file.
;
;--------------------------------------------------------------------------
; Register use:
; registers A0-A6 and D0-D7 will be saved/restored
; A0/A1 - general use, may be clobbered during calls to system
; A2    - general use
; A3/A4 - repectively hold the values of A0/A1 at entry
; A5    - points to Quickdraw globals, don't touch
; A6    - could be used as frame pointer
; A7    - stack pointer, don't touch
; D0-D2 - general use, may be clobbered during calls to system
; D3-D7 - general use

; Use these for a 512K Mac
;       INCLUDE MacTraps.D
;       INCLUDE SysEqu.D
;       INCLUDE ToolEqu.D
;       INCLUDE QuickEqu.D

; Use these for a 128K Mac
        INCLUDE SPtraps.asm
        INCLUDE SPequ.asm

GoodByeKiss     EQU     -1

TRUE            EQU     1
FALSE           EQU     0

DAStart:
        ; This is the Desk Accessory header. The first four words
        ; determine the behavior of the desk accessory.
        ; Flags/descriptor: $400 - Control calls enabled
        ;                   $1000 - Send DA a "GoodByeKiss" when the application
        ;                           heap is going to be reinitialized
        ;                   $2000 - DA needs periodic calls
        ;                   $4000 - Lock the DA in memory when it is active
        ; Tick Count: How often should periodic calls happen in 60ths
        ;             of a second. Control routine gets calls of type accRun.
        ; Event Mask: Indicates what events the DA can handle.
        ; Menu ID:    Indicates the id of the menu associated with the DA.
        ;             If the user selects a menu with a negative id (meaning
        ;             the menu belongs to a DA), the system checks this
        ;             word in all active DAs to decide who should get
        ;             a call of type accMenu.
        DC.W    $4400                   ; Flags/descriptor
                                        ; (lock in memory, can respond to
                                        ;  Control calls)
        DC.W    0                       ; Tick Count
        DC.W    $016A                   ; Event mask
                                        ; (will handle: keydown, autokey,
                                        ;  mousedown, update, activate)
        DC.W    0                       ; Menu ID
        DC.W    DAOpen    -DAStart      ; Offset to open routine
        DC.W    DAPrime   -DAStart      ; Offset to prime routine
        DC.W    DAControl-DAStart       ; Offset to control routine
        DC.W    DAStatus  -DAStart      ; Offset to status routine
        DC.W    DAClose   -DAStart      ; Offset to close routine
        DC.B    15                      ; Desk Accesory title
        DC.B    'Show Picture DA'       ; (This is optional - it only helps
        .ALIGN  2                       ;  to identify the DA in the heap.
                                        ;  The DA appears in the Apple
                                        ;  menu using the name of DRVR.)
DAOpen:
        MOVEM.L A0-A6/D0-D7,-(SP)       ; Save registers
        MOVE.L  A1,A4                   ; Put DCE pointer in A4
        PEA     SavePort                ; Save Grafport
        _GetPort

        ; *** Desk Accessory Open ***

        ; We get here when the application does a OpenDeskAcc call.
        ; It is where the desk accessory is initialized. Windows
        ; are opened, menus created and local storage initialized.

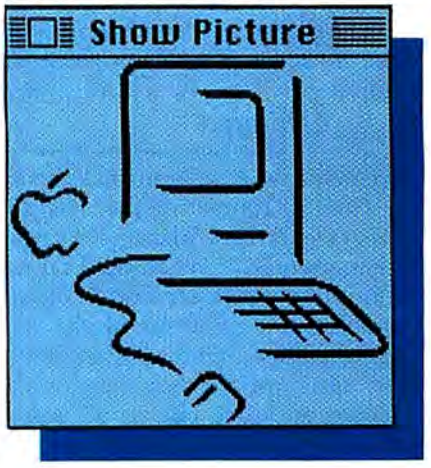
        ; *** Cut From Here ***

        ; We will not draw directly to the window (an automatic update
        ; event generated when the window is created will have the
        ; control section of this DA draw the window contents).
        ; Make sure that the window is only opened once (in case the
        ; user selects the same DA twice). The window pointer will be
        ; non-zero if it was already opened.
        TST.L   dCtlWindow(A4)          ; Does the window exist ?
        BNE     GoodOpen                ; If yes, the DA was already opened
        ; We need to calculate the DA resource id so that we can
        ; access the DA's resources. We expect that the DA and its
        ; resources have been renumbered when they were placed in the
        ; System file. Thus, each time we access a resource we will
        ; calculate what the resource's id will be based on the DA id.
        ; This also gives us an oportunity to get our own name. We will
        ; use the name for our DA window.
        LEA     DAStart,A0              ; Get handle to the DA
        _RecoverHandle
        MOVE.L  A0,-(SP)                ; Get information about DA
        PEA     DriverID                ; DA id
        PEA     DriverType              ; DA type = 'DRVR'
        PEA     DriverName              ; DA name
        _GetResInfo
        ; Get the 'PICT' resource from the System file.
        ; Use the following formula to get the 'PICT' resource id:
        ; (and the id for other "private' DA resources)
        ; 'PICT' resource id = -16384 + (32 * DA id) + 'PICT' resource number
        ; The resource number can be from 0 to 31. Thus we can have
        ; up to 32 resources of a given type.
```

The Desk Accessory Header

Desk accessory code starts with a special header consisting of a few words of flags and other data, followed by offsets to the different routines that actually do the work of the desk accessory.

The first word of the header determines the behavior of the desk accessory. It contains flags to let the Desk Manager know whether the desk accessory responds to control calls, needs a "GoodByeKiss," needs periodic calls, or should be locked in position in memory.



You set the Control flag to indicate that the desk accessory can respond to control events. This is necessary for any desk accessory that co-exists on the desktop with an application. The only kind of desk accessory that does not need to set this flag is one that immediately performs some function and then closes itself.

Setting the GoodBye flag in the header tells the Desk Manager to send a GoodByeKiss message to the desk accessory when the application is closed (before the user is returned to the Finder). This gives the desk accessory an opportunity to close files, unlock handles and otherwise perform any clean-up it needs to do.

The Time flag tells the system that the desk accessory must perform periodic tasks. For example, it would allow a Clock desk accessory to update the time every second.

The Lock flag is set to lock the desk accessory code position in the application heap when it is active. Locking the desk accessory is necessary if the desk accessory will make system calls that may result in heap compaction. Unless you are sure no system calls will cause heap compaction, set the Lock flag in the DA Header. The best example of a system call that can cause heap compaction is the large SFGetFile/SFPutFile package. If the desk accessory is moved in the heap during the compaction, the system call will return to a location that no longer holds the desk accessory, and your Mac will signal its entry into the Twilight Zone with the ID=02 bomb.

The second word of the DA Header is the Tick Count, how often the desk accessory needs periodic calls if the Time flag is set. A Tick Count of 0 means the desk accessory should be called as often as possible, 1 means it should happen every 60th of a second,

```
        SUB.L   #4,SP                   ; Make room for the result
        MOVE.L  #'PICT',-(SP)           ; Want a 'PICT' type
        MOVE.W  DriverID,D0             ; Calculate resource id
        ASL.W   #5,D0
        OR.W    #$C000,D0
        ADD.W   #0,D0                   ; 'PICT' resource # 0
        MOVE.W  D0,-(SP)
        _GetResource                    ; Get the resource
        MOVE.L  (SP)+,D0                ; Handle to the resource
        LEA     ThePicture,A0           ; Save the handle
        MOVE.L  D0,(A0)
        TST.L   D0                      ; Did we get the resource ?
        BNE     DAOpen1
        ; Tell the user that we didn't get the resource.
        ; Show an alert box, must calculate the id for the 'ALRT' resource.
        SUB.W   #2,SP                   ; Make room for the result
        MOVE.W  DriverID,D0             ; Calculate alert id
        ASL.W   #5,D0
        OR.W    #$C000,D0
        ADD.W   #0,D0                   ; Alert # 0
        MOVE.W  D0,-(SP)                ; Push Alert id
        MOVE.L  #0,-(SP)                ; No filter proc
        _StopAlert                      ; Tell user what happened
        MOVE.W  (SP)+,D0                ; Throw away itemhit
        BRA     BadOpen
DAOpen1:
        ; So far everything is OK. We will figure out the size of
        ; the picture that we have and create a window of the same size.
        MOVE.L  ThePicture,-(SP)        ; Detach the handle from the
        _DetachResource                 ;    resource map
        MOVE.L  ThePicture,A0           ; Lock the PICT handle
        _HLock
        ; Find out the screen size from the Quickdraw globals.
        ; Is it a Mac, a Lisa, or ?
        ; The Quickdraw global screenBits.bounds has the size.
        MOVE.L  (A5),A0                 ; Get pointer to Quickdraw globals
        ADD.L   #screenBits+bounds,A0   ; Add offset to screenBits.bounds
        LEA     ScreenHeight,A1         ; Save screen height
        MOVE.W  bottom(A0),(A1)
        LEA     ScreenWidth,A1          ; Save screen width
        MOVE.W  right(A0),(A1)
        ; Calculate the size of the PICT data.
        ; PictureWidth  = (*ThePicture)->picFrame.right -
        ;                 (*ThePicture)->picFrame.left
        ; PictureHeight = (*ThePicture)->picFrame.bottom -
        ;                 (*ThePicture)->picFrame.top
        MOVE.L  ThePicture,A0
        MOVE.L  (A0),A0
        MOVE.W  picFrame+right(A0),D0
        MOVE.W  picFrame+left(A0),D1
        SUB.W   D1,D0
        LEA     PictureWidth,A1
        MOVE.W  D0,(A1)
        MOVE.W  picFrame+bottom(A0),D0
        MOVE.W  picFrame+top(A0),D1
        SUB.W   D1,D0
        LEA     PictureHeight,A1
        MOVE.W  D0,(A1)
        ; Calculate the window size we need to display the PICT data
        ; and center it in the screen.
        ; WindowRect.top    = 40
        ; WindowRect.bottom = WindowRect.top + PictureHeight
        ; WindowRect.left   = (ScreenWidth-PictureWidth)/2
        ; WindowRect.right  = WindowRect.left + PictureWidth
        MOVE.W  #40,D0
        LEA     WindowRect+top,A0
        MOVE.W  D0,(A0)
        ADD.W   PictureHeight,D0
        LEA     WindowRect+bottom,A0
        MOVE.W  D0,(A0)
        MOVE.W  ScreenWidth,D0
        SUB.W   PictureWidth,D0
        LSR.W   #1,D0
        LEA     WindowRect+left,A0
        MOVE.W  D0,(A0)
        ADD.W   PictureWidth,D0
        LEA     WindowRect+right,A0
        MOVE.W  D0,(A0)
        ; Calculate the display rectangle for Quickdraw's DrawPicture.
        ; DisplayRect.top    = 0
        ; DisplayRect.bottom = PictureHeight
        ; DisplayRect.left   = 0
        ; DisplayRect.right  = PictureWidth
        LEA     DisplayRect+top,A0
        MOVE.W  #0,(A0)
        LEA     DisplayRect+bottom,A0
        MOVE.W  PictureHeight,(A0)
        LEA     DisplayRect+left,A0
        MOVE.W  #0,(A0)
        LEA     DisplayRect+right,A0
        MOVE.W  PictureWidth,(A0)
        ; Now create the DA window. It will be the size of the PICT
        ; resource and centered on the screen. It will use the name
        ; of the 'DRVR' resource (the name in the Apple menu).
        SUB.L   #4,SP                   ; Make room for result
        MOVE.L  #0,-(SP)                ; Create WindowRecord on the heap
        PEA     WindowRect              ; Push the address of the window's rect
        PEA     DriverName              ; Push the address of the window's title
        MOVE.B  #FALSE,-(SP)            ; Make it invisible for now
        MOVE.W  #noGrowDocProc,-(SP)    ; Push the window definition id
        MOVE.L  #-1,-(SP)               ; Window will appear in front
        MOVE.B  #TRUE,-(SP)             ; Give it a goaway box
        MOVE.L  #0,-(SP)                ; Window reference value
        _NewWindow                      ; Create the window
        MOVE.L  (SP)+,D0                ; Get the window pointer
        LEA     MyWindow,A0             ; Save the window pointer
        MOVE.L  D0,(A0)
        TST.L   D0                      ; Was a window created ?
        BEQ     BadOpen
        ; Two important things need to be done here: 1) Put the DA RefNum
        ; in the windowKind field of the window record 2) Put the window
        ; pointer in the DCE block. These together connect the window
        ; with the DA.
        MOVE.L  MyWindow,A0             ; Set the windowKind field to the
```

THE ART AND CRAFT OF DESK ACCESSORIES

(continued from page 117)

2 means every 30th of a second. You get the picture. When the set time interval has elapsed, the Desk Manager will send a "accRun" message to the control routine, assuming that a SystemEvent call is made often enough by the application.

The third word of the DA Header is the Event Mask, in the standard format. It indicates what events the desk accessory can handle.

The fourth word of the DA Header is the Menu ID of the desk accessory (use a 0 if the desk accessory does not have a menu). The Menu ID of a desk accessory must be zero or a negative number.

The five words following the DA Header are offsets to the open, prime, control, status and close routines. Although desk accessories do not use the prime or status routines, it is a good idea to include some code to return from them just in case they do get called. That's always true in writing Mac programs; you'll get fewer bombs if you plan for *every* possibility.

The last part of the header is an optional title. The title can be used to help identify the desk accessory in memory.

The Open Routine

The Open routine is called when the application opens the desk accessory. It gives the desk accessory the opportunity to initialize local storage, open a window, create menus and do whatever else it has to do. Normally, the Open routine should not actually perform the primary functions of the desk accessory—that should be left to the Control routine.

Every desk accessory should test to see if it is already open, in case the user selects the same desk accessory twice (or more — you must know someone like that). A good test for this can be to check if the desk accessory window is already open.

Registers A0 and A1 point to important data structures when a desk accessory is called. Register A1 points to the Device Control Entry (DCE). The DCE structure is created by the System when the desk accessory is first opened. Most of its information is copied from the desk accessory header.

If the desk accessory opens a window, its Open routine must copy the desk accessory window pointer to the DCE. The DCE is used by the Desk Manager to manage the desk accessory and to determine which system events belong to, and should be handled by, the desk accessory. It can be used by the desk accessory to find out more information about itself such as its position in memory and its reference number.

Control Routine

The application will send messages to the Control routine of the desk accessory via the Desk Manager when an action is required. When the Control routine of the desk accessory is called, A0 points to a parameter block. This parameter block indicates what action the Control routine should perform.

There are two classes of action messages: (A) messages that are obvious (GoodByeKiss, Run, Cursor, Undo, Cut, Copy, Paste and Clear);

```
                                ;    DA RefNum
        MOVE.W  dCtlRefNum(A4),windowKind(A0)
        MOVE.L  MyWindow,dCtlWindow(A4) ; Put the window pointer in the DCE

        ; *** Cut To Here ***

GoodOpen:
        MOVE.L  SavePort,-(SP)          ; Restore Grafport
        _SetPort
        MOVEM.L (SP)+,A0-A6/D0-D7       ; Restore registers
        MOVE.W  #0,D0                   ; Return code
        RTS
BadOpen:
        MOVE.L  SavePort,-(SP)          ; Restore Grafport
        _SetPort
        MOVEM.L (SP)+,A0-A6/D0-D7       ; Restore registers
        MOVE.W  #-1,D0                  ; Return code
        RTS

DAControl:
        MOVEM.L A0-A6/D0-D7,-(SP)       ; Save registers
        MOVE.L  A0,A3                   ; Put pointer to parm block in A3
        MOVE.L  A1,A4                   ; Put pointer to DCE in A4
        PEA     SavePort                ; Save Grafport
        _GetPort

        ; *** Desk Accessory Control ***

        ; The system will pass control to us here when we need to do
        ; something (kind of nice! just sit back and wait). There are
        ; two types of messages that we may get: 1) Messages that are
        ; obvious (like Undo, Cut, Copy, Paste, and Clear) 2) Messages
        ; that require more decoding (like event - what kind of event
        ; is it ?)
        ; The types of messages:
        ; "GoodByeKiss": Application heap is going to be initialized
        ; Event:  Handle a given event, it will be necessary to do
        ;           some more decoding. (result of SystemClick/SystemEvent call)
        ; Run:    Do a periodic action. Must have $2000 flag and Tick Count
        ;           set in the DA header. (result of SystemTask call)
        ; Cursor: Change cursor shape if appropriate. (result of SystemTask call)
        ; Menu:   Handle a menu item, it will be necessary to do
        ;           some more decoding. Must have the menu id set in the
        ;           DA header(result of SystemMenu call).
        ; Undo:   Handle the Undo command. (result of SystemEdit call)
        ; Cut:    Handle the Cut command. (result of SystemEdit call)
        ; Copy:   Handle the Copy command. (result of SystemEdit call)
        ; Paste:  Handle the Paste command. (result of SystemEdit call)
        ; Clear:  Handle the Clear command. (result of SystemEdit call)

        ; *** Cut From Here ***
        ;
        MOVE.L  MyWindow,-(SP)          ; Make mywindow the Grafport
        _SetPort
        ;
        ; *** Cut To Here ***
        ; A3 points to the parameter block which tells us what we need
        ; to do and supplies us with the data to carry it out.
        MOVE    csCode(A3),D0
        ; A "GoodByeKiss" indicates that the application heap is about
        ; to be cleaned up. It is our chance to close up before it happens.
        ; Jump to the normal DA close code.
        CMP.W   #GoodByeKiss,D0         ; "GoodByeKiss" message
        BEQ     CloseDA
        CMP.W   #accEvent,D0            ; Event message from SystemEvent
        BEQ     CTLEvent
        CMP.W   #accRun,D0              ; Run message from SystemTask
        BEQ     CTLRun
        CMP.W   #accCursor,D0           ; Cursor message from SystemTask
        BEQ     CTLCursor
        CMP.W   #accMenu,D0             ; Menu message from SystemMenu
        BEQ     CTLMenu
        CMP.W   #accUndo,D0             ; Undo message from SystemEdit
        BEQ     CTLUndo
        CMP.W   #accCut,D0              ; Cut message from SystemEdit
        BEQ     CTLCut
        CMP.W   #accCopy,D0             ; Copy message from SystemEdit
        BEQ     CTLCopy
        CMP.W   #accPaste,D0            ; Paste message from SystemEdit
        BEQ     CTLPaste
        CMP.W   #accClear,D0            ; Clear message from SystemEdit
        BEQ     CTLClear
CTLReturn:
        MOVE.L  SavePort,-(SP)          ; Restore Grafport
        _SetPort
        MOVEM.L (SP)+,A0-A6/D0-D7       ; Restore registers
        MOVE.W  #0,D0                   ; Return code
        MOVE.L  JIODone,-(SP)           ; Goto IODone
        RTS

CTLEvent:
        MOVE.L  csParam(A3),A2
        MOVE.W  evtNum(A2),D0
        CMP.W   #keyDwnEvt,D0           ; Keydown event
        BEQ     EVTkeyDown
        CMP.W   #autoKeyEvt,D0          ; Autokey event
        BEQ     EVTautoKey
        CMP.W   #mButDwnEvt,D0          ; Mousedown event
        BEQ     EVTmouseDown
        CMP.W   #updatEvt,D0            ; Update event
        BEQ     EVTupdateEvt
        CMP.W   #activateEvt,D0         ; Activate event
        BEQ     EVTactivateEvt
        BRA     CTLReturn

CTLRun:
        BRA     CTLReturn
CTLCursor:
        BRA     CTLReturn
CTLMenu:
        BRA     CTLReturn
CTLUndo:
        *** Cut From Here ***
```

and (B) messages that require more decoding (Event and Menu).

There are nine types of messages:

GoodByeKiss — The application is closing and the application heap is being reinitialized. This is a last opportunity to clean up. Normally the desk accessory should jump to the Close routine after receiving this message.

Event — Handle a given event (it will be necessary to do some decoding to determine what type of event has been passed).

Run — Do a periodic action (only if the Time flag is set and a Tick Count is assigned).

Cursor — Change cursor shape if appropriate.

Menu — Handle a SystemMenu call (it will be necessary to determine which menu and item has been selected).

Undo, Cut, Copy, Paste, Clear — result of SystemEdit calls.

When the requested action has been completed, the Control routine should do a jump to "JIODone" rather than an "RTS". This will indicate to the system that the call has been completed (trust us on this one).

Close Routine

The Close routine should close the desk accessory and remove all data structures associated with it. By default, the Close routine will only be called if the user explicitly closes the desk accessory. To anticipate situations where the user may quit applications with desk accessories still open, the desk accessory should set the GoodBye flag and respond to GoodByeKiss control calls by calling the Close routine.

If the desk accessory has any private storage, it must dispose of its storage. If the desk accessory has a window, it should be closed, and the window pointer in the DCE replaced with NIL. If the desk accessory has any open files, they should be closed.

Private Resources

Sometimes desk accessories need their own resources. This can cause a problem when desk accessories are renumbered by Apple's Font/DA Mover. (Renumbering will occur if a desk accessory's current ID number is already in use by another desk accessory.) Thus all desk accessories must figure out, at execution time, the correct ID to reference. If you do not properly reference and number the resources, they will not be found.

The formula for figuring out the ID of a private resource is as follows: "Resource ID = −16384 + (32*DA ID) + Resource Number." The Resource Number can be from 0 to 31, thus we can have up to 32 private resources of each type in each desk accessory.

An additional problem is that of ID references embedded in other resources, such as a DITL in a DLOG. Apple's Font/DA Mover helps solve this problem by backpatching the resources when they are installed in the System file.

Apple's Font/DA Mover currently backpatches: (1) DLOG/ALRT references to DITL; (2) DITL

(continued on page 122)

```
        MOVE.W  #3,-(SP)                ; Beep on Undo message
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
CTLCut:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on Cut message
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
CTLCopy:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on Copy message
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
CTLPaste:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on Paste message
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
CTLClear:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on Clear message
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
EVTkeyDown:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on keydown event
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
EVTautoKey:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on autokey event
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
EVTmouseDown:
        ; *** Cut From Here ***
        MOVE.W  #3,-(SP)                ; Beep on mousedown event
        _SysBeep
        ; *** Cut To Here ***
        BRA     CTLReturn
EVTupdateEvt:
        ; *** Cut From Here ***
        ; We don't draw to the window directly. We wait until the system
        ; reports (through an update event) that it has been corrupted
        ; and needs to be redrawn. The system will generate an update event
        ; when the window is first created.
        MOVE.L  MyWindow,-(SP)          ; Update MyWindow
        _SetPort
        MOVE.L  MyWindow,-(SP)          ; BeginUpdate(MyWindow)
        _BeginUpdate
        MOVE.L  ThePicture,-(SP)        ; DrawPicture(ThePicture,DisplayRect)
        PEA     DisplayRect
        _DrawPicture
        MOVE.L  MyWindow,-(SP)          ; EndUpdate(MyWindow)
        _EndUpdate
        ; *** Cut To Here ***
        BRA     CTLReturn
EVTactivateEvt:
        BRA     CTLReturn


DAClose:
        MOVEM.L A0-A6/D0-D7,-(SP)       ; Save registers
        MOVE.L  A1,A4                   ; Put Device Control Entry in A4
        PEA     SavePort                ; Save Grafport
        _GetPort
CloseDA:

        ; *** Desk Accessory Close ***

        ; We get here as a result of a CloseDeskAcc call.
        ; This is where we clean up "all" the structures that the DA
        ; created. It is important for three reasons: 1) We don't want
        ; to slowly "eat up" the heap 2) Dangling pointers sometimes
        ; cause crashes. 3) To make sure that all "user" data has been
        ; safely stored away.

        ; *** Cut From Here ***

        MOVE.L  ThePicture,A0           ; Unlock the handle to the 'PICT'
        _HUnlock
        MOVE.L  ThePicture,-(SP)        ; Free up the space
        _KillPicture
        ; This code is necessary because some applications close all
        ; open windows when they quit. If we close an already closed
        ; window a system error will probably occur. We will start at
        ; the front window and work our way back through pointers. If
        ; we find that our window is still open open, we will close it.
        CLR.L   -(SP)                   ; Get front window pointer
        _FrontWindow
        MOVE.l  (SP)+,D0
DAClose1:
        TST.L   D0                      ; Are there any more windows ?
        BEQ     DAClose3
        CMP.L   MyWindow,D0             ; Is this our window ?
        BEQ     DAClose2
        MOVE.L  D0,A0
        MOVE.L  nextWindow(A0),D0       ; Get the next window in the chain
        BRA     DAClose1
DAClose2:
        MOVE.L  MyWindow,-(SP)          ; Throw away our window
        _DisposWindow
        MOVE.L  #0,dCtlWindow(A4)       ; Window is gone, tell the DCE
DAClose3:

        ; *** Cut To Here ***

        MOVE.L  SavePort,-(SP)          ; Restore Grafport
```



A STUNNING PACKAGE

...Jonathan Sacks, Popular Computing, August 1985

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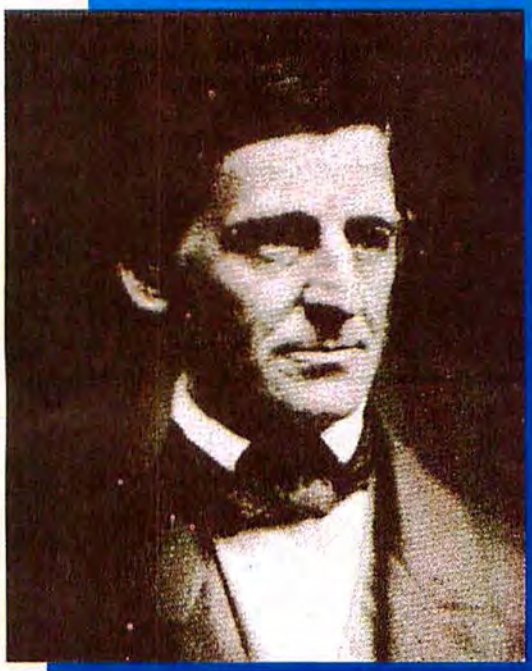
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"If a man can write a better book, preach a better sermon, or make a better mousetrap than his neighbor, though he builds his house in the woods the world will make a beaten path to his door."



Attributed to Ralph Waldo Emerson (1803-1882) by S.B. Yule and Mary S. Keene

We hope so, Ralph. We hope so!

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THE MACINTOSH RESOURCE

THE ART AND CRAFT OF DESK ACCESSORIES

(continued from page 119)

references to ICON, PICT and CTRL; (3) MENU references to MDEF; and (4) MENU first word is its ID; implemented in version 1.3 of Font/DA Mover, not in version 1.2. The following backpatches are not implemented: (1) MBAR references to MENU; (2) MENU references to ICON (because the link is 1 byte); (3) CTRL reference to CDEF (due to procID restrictions); and (4) WIND references to WDEF (due to procID restrictions).

The purgeable bit must be set on for the desk accessory DRVR resource and for its private resources. If it is not set, the system will be able to remove the resources during heap compactions even after the desk accessory has been closed. RMaker doesn't set these properly, and the Font/DA Mover transfers the current value instead of setting the value. Thus, the Resource Editor should be used to set the purgeable bits on all the resources when the desk accessory is first built or you may have a desk accessory that the application can't get rid off, eating up valuable memory.

The Generic Desk Accessory

"Show Picture" (listing on pp. *116-122*) is a sample program designed to help you write desk accessories. The desk accessory itself, when selected, displays a picture created by *MacPaint*, *MacDraw*, or any other graphic program. Although this is a small program (as assembly language programs go), it is a complete example of how a desk accessory should be written.

Once you are familiar with the "Show Picture" desk accessory, and how it works, you can easily make it into a generic desk accessory shell. It's as simple as removing all the code from the between "Cut From Here" and "Cut To Here" comments!

Desk accessories are certainly among the most challenging programs to design and write. Remember though that your actual program can follow the logical sequence shown here.

We hope that your DeskTop is soon crowded with your own creations.

```
        _SetPort
        MOVEM.L (SP)+,A0-A6/D0-D7       ; Restore registers
        MOVE.W  #0,D0                   ; Return code
        RTS


        ; Prime and Status are not used by Desk Accesories.
        ; These are included "just in case".
DAPrime:
        MOVE.W  #0,D0                   ; Return code
        RTS
DAStatus:
        MOVE.W  #0,D0                   ; Return code
        RTS

SavePort:       DC.L    0               ; Application's Grafport
;
; *** Cut From Here ***
MyWindow:       DC.L    0               ; DA window pointer
DriverID:       DC.W    0               ; DA resource id
DriverType:     DC.L    0               ; DA resource type
DriverName:     DCB.B   256,0           ; DA resource name
ThePicture:     DC.L    0               ; PICT handle
ScreenHeight:   DC.W    0               ; Height of the screen
ScreenWidth:    DC.W    0               ; Width of the screen
PictureHeight:  DC.W    0               ; Height of the PICT
PictureWidth:   DC.W    0               ; Width of the PICT
WindowRect:     DC.W    0,0,0,0         ; DA window rectangle
DisplayRect:    DC.W    0,0,0,0         ; PICT display rectangle
; *** Cut To Here ***

        END
```

```
* File - ShowPict.R

* This file will create a Font/DA Mover document. It will be necessary
* to use the Resource Editor to copy/paste/renumber a 'PICT' resource
* into the DA document, and to set all the resources as purgeable. Initially
* the DA will have an ID of 26, thus the 'PICT' should be renumbered to
* the formula "Resource ID = -16384 + (32*DA ID) + Resource Number", or
* -15552. Once you load the DA into the System file, the Font/DA Mover
* will most change the resource numbers.

Mac User:Show Picture
DFILDMOV

TYPE DRVR = PROC
Show Picture,26(32)
Mac User:ShowPict

TYPE ALRT
   ,-15552(32)
100 100 200 412
-15552
7777

TYPE DITL
   ,-15552(32)
2

BUTTON
70 250 90 300
OK

STATICTEXT DISABLED
10 70 26 300
Could not open PICT resource
```

```
;File - ShowPict.link

/Output ShowPict
/Type 'RSRC'

ShowPict

$
```

```
:File - ShowPict.job

Asm     ShowPict.asm    Exec    Edit
Link    ShowPict.link   Exec    Edit
Rmaker  ShowPict.R      Exec    Edit
```

```
windowKind      EQU     $6C     ; type of window [word]
nextWindow      EQU     $90     ; next window in z-ordered list [pointer]
```

```
:ShowPict Traps - for compilation on a 128K Macintosh

        .TRAP   _GetPort                $A874
        .TRAP   _RecoverHandle          $A100+40
        .TRAP   _GetResInfo             $A9A8
        .TRAP   _GetResource            $A9A0
        .TRAP   _StopAlert              $A986
        .TRAP   _DetachResource         $A992
        .TRAP   _HLock                  $A000+41
        .TRAP   _NewWindow              $A913
        .TRAP   _SetPort                $A873
        .TRAP   _HUnLock                $A000+42
        .TRAP   _KillPicture            $A8F5
        .TRAP   _FrontWindow            $A924
        .TRAP   _DisposWindow           $A914
        .TRAP   _SysBeep                $A9C8
        .TRAP   _BeginUpDate            $A922
        .TRAP   _DrawPicture            $A8F6
        .TRAP   _EndUpDate              $A923

;ShowPict Equates - For compilation on a 128K Mac

; *** from QuickEqu.Txt ***

; QuickDraw Global Variables
screenBits      EQU     $FFFFF986       ; [BitMap]

; Bitmap Structure
bounds          EQU     6       ; bounding box [rectangle]

; Rectangle structure
top             EQU     0       ; top coordinate [word]
left            EQU     2       ; left coordinate [word]
bottom          EQU     4       ; bottom coordinate [word]
right           EQU     6       ; right coordinate [word]

; Picture Structure
picFrame        EQU     2       ; bounding box [rectangle]

; *** from SysEqu.Txt ***

; Device Control Entry Definition
dCtlRefNum      EQU     $18     ; refNum of this driver [word]
dCtlWindow      EQU     $1E     ; driver's window [pointer]

; Driver Globals
JIODone         EQU     $8FC    ; IODone entry location [pointer]

; Specific fields for _Control, _Status
csCode          EQU     $1A     ; control/status code [word]
csParam         EQU     $1C     ; operation-defined parameters [20 bytes]

; Event Record Definition
evtNum          EQU     0       ; ID number of event [word]
mButDwnEvt      EQU     1       ; mouse button down
keyDwnEvt       EQU     3       ; key down
autoKeyEvt      EQU     5       ; auto-repeated key
updatEvt        EQU     6       ; update event
activateEvt     EQU     8       ; activate/deactive event

; Message Definitions (in CSCode of control call)
accEvent        EQU     $40     ; event message from SystemEvent
accRun          EQU     $41     ; run message from SystemTask
accCursor       EQU     $42     ; cursor message from SystemTask
accMenu         EQU     $43     ; menu message from SystemMenu
accUndo         EQU     $44     ; undo message from SystemEdit
accCut          EQU     $46     ; cut message from SystemEdit
accCopy         EQU     $47     ; copy message from SystemEdit
accPaste        EQU     $48     ; paste message from SystemEdit
accClear        EQU     $49     ; clear message from SystemEdit

; *** from Toolequ.Txt ***

; Resource ID's for windows
noGrowDocProc   EQU     4       ; no grow area WDEF ID

; Window Data Structure Definition
```

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THE WIZARD IS IN

(continued from page 63)

mastering the secrets of time itself is it possible to eliminate the witch and win the game. Time doors allow travel though different ages, from prehistory to the post-nuclear future. Modes of travel vary from horseback to spaceships, with just about everything but a bright red Corvette in between. The sheer size of the map is astounding, especially when one takes into account the complete maps of every planet in space. While not all of the terrain must be seen in order to win the game, landing on a planet populated exclusively by computer game designers is an amusing sidetrack before you get on with the more serious stuff.

The translation of the game makes good use of the mouse, though the graphics are thicker and harder to see than they should be. It's nearly impossible to spot small towns, which are represented on-screen as a cluster of five circles, since they bear a very close resemblance to the graphics used to represent trees.

Ultima III: Exodus makes better use of the Mac's graphics resolution capability, with its icons custom-drawn just for the Mac edition. In the game, players can send a party of up to four characters throught the vast countryside of Sosaria, where wandering packs of monsters grow larger and more dangerous as time passes. The group will have to pry into every corner of the map to unearth knowledge of a lost continent—and the secrets hidden on a remote island, beyond a snakelike ward. Moon Gates have replaced the time doors on the map, appearing and disappearing during different phases of the twin moons.

(continued on page 144)

The worlds of role-playing games are dangerous enough for experienced players—for the inexperienced, they can be downright frustrating. Below is a short guide to the staples of role-playing: how to map, how to fight, and most important, what to do if you're hopelessly stuck.

KEEPING YOUR BEARINGS

Any game which involves dungeons will require players to keep accurate maps if they hope to find their way back to terra firma. Only by keeping reasonably accurate records of where you've been will you be able to figure out how to get back there in a hurry—or where to explore new territory.

Large-grid graph paper is the dungeon explorer's best friend. Count each step you take as a single square, noting turns to the right or left, and any doors or hallways you see, on the map. Use a fresh sheet of paper if you go up or down any elevators or stairs. Here we've shown a sample map of the first level of a hypothetical dungeon:
(art).

Note that all obvious doors are marked, while the secret doors are shown with an S. X marks the spots where pit traps await the unwary. Where we found strange writing, we indicated it on the map with a W.

MAY THE BEST FIGHTER WIN

The life of your party ultimately rests on its skill as a fighting unit. Making good use of all your characters, and of the combat area, can swing the battle's outcome to your favor.

First, know your opponent. If you're fighting a group of relative weaklings like kobolds and orcs, throwing a seventh-level "nuke" spell just might be overkill. Let your fighters pick them off one by one, and save your strength for bigger fish. On the flip side, don't feel obligated to fight to the finish against whatever huge creature is thrown your way. Many games give players the option of running away during combat. The option is there for a reason!

If a creature is poisonous and the game allows for it, let your archers or wizards fight from a safe distance. Just remember that you must already have your missle weapon in hand if you want to use it.

In conventional battles, the wisest move is to maneuver the opponents to an area most favorable for you. There's no reason to rush up to a crew of ten orcs, letting three of them swing at Ralph the fighter for every swipe he takes at them. If you can't bait the monsters into attacking three of your characters with one of theirs, at least keep the odds even.

Finally, keep an eye on the relative health of your characters, and pull those near death out of harm's way when possible. A quick healing spell in the heat of battle can keep a critically injured fighter from becoming a dead one.

THE SUCCESSFUL ADVENTURER

Unlike text adventure games, role-playing games don't confuse the player with word-guessing games. Still, there will be times you'll find yourself stuck in a situation from which it seems impossible to continue. Keep the following in mind when you're tempted to use your game disk as the puppy's chew toy:

• *There's Always a Way!* If you can't enter a specific area, you need an object that will unlock the path. This could be a boat (and you may need something in hand just to board), or a key or a statue, or it could just be piece of information you could have missed along the way. Don't despair. Just redouble your efforts to find the missing puzzle piece. There are times when just a word will do. Just make sure it's the right one.

• *Be Prepared.* There are times you'll enter a situation that requires a special item (armor, weapon or perhaps a coordinate). For example, blasting off into space without the proper protection can be rather messy. And it can be frustrating if you don't already know where you're going.

• *A Weapon in Hand Is Worth Two in the Bag:* All the fancy weapons and armor in the known world won't help you in battle if you forgot to actually equip the item (that is, put it in your hand). Also, if your game requires that characters eat, stock up on supplies before making any long journeys, or you might starve before you find another McDonall's.

• *Nothing Is Permanent.* Not even what happens to characters. While most role-playing games allow for resurrection of the dead, this is just a time- and money-consuming process. Simply removing the disk from the drive before you enter a dangerous situation is a perfect failsafe against whatever horror befalls the party. Be warned though—in at least one game we discussed, characters must go through a false death before finding a crucial area in the game.

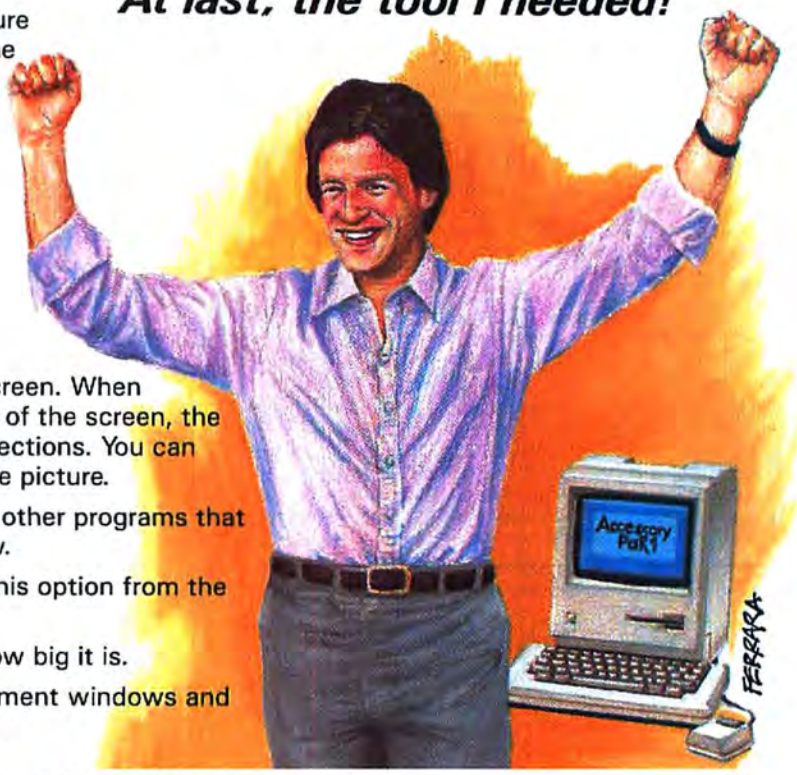
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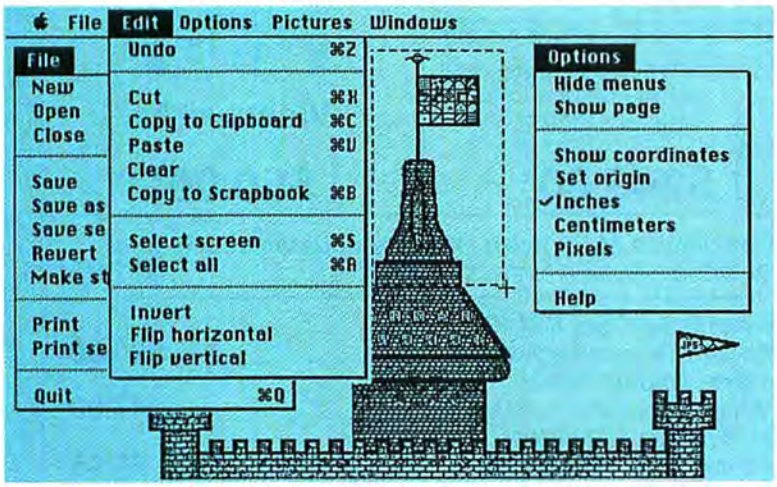
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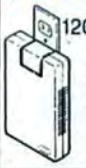


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ANSWERS FROM THE MAC TEAM

The Mac is the easiest to operate, most intuitive computer in the world. We all know that. But sometimes there's a question that you can't find the answer to, not in the manuals (which you have read in spite of your promises not to), not from your friends, not from from any user group. Where next? How about the Mac Team? In this monthly column Apple's Dan Cochran will answer your questions. When the questions are too tough for him, he will pool brainpower with other members of the Mac Team in Cupertino. So ask what you need to know and get your answer straight from the source!

Send your questions to Dan care of **MacUser**, 25 West 39th Street, New York, NY 10018. *Dan will read all of your questions, but unfortunately, he can't answer individual queries. Watch this space for the pick of each month's Q and A crop.*

Why does the Macintosh access its disk drives so much?

A Macintosh application uses many resources. Resources include menus, fonts, icons, graphics, and even the program code itself. However, not all of these resources are always needed at the same time by a Macintosh application. Part of the Macintosh ROM contains a group of routines that we refer to as the Resource Manager. The Resource Manager loads the appropriate resource into RAM when the application asks for it. For example, when you change fonts in *MacWrite* the Resource Manager does the dirty work.

In a sophisticated program, it's impossible for all of the resources that a program needs to be all together in the Macintosh memory, there simply isn't enough real estate. Therefore, many of a program's resources reside on disk, and are only invited to join the other memory-based resources when needed.

When you open a desk accessory, or create a new window, the Resource Manager goes to the disk, finds what you need, and brings it into memory if there's enough room. If there isn't, it will look around memory, see if there are any resources that it doesn't need anymore, purge the unnecessary resource to free up space, and then read the new resource into memory. Of course, the more memory you have, the more resources can be present in memory. This is why 512K Macintosh doesn't access the disk drives as much as a 128K Macintosh. I suppose that if a 10-megabyte Macintosh existed, the Resource Manager would be out of work.

The challenge to the programmer is to optimize the use of resources to minimize the number of times that the disk drives are accessed.

Why do Macintosh products take so long to develop?

Developing Macintosh products presents three challenges to the programmer: Understanding an impressive, yet often bewildering array of new tools; learning how to use these tools most effectively; and rethinking basic beliefs about what a program really is, how it should communicate with the user, and how the user should communicate with it.

As with any new technology, the Macintosh programmer must undergo a rather steep learning curve. (It generally requires a minimum of three months for a person to become familiar enough with the Macintosh to even begin serious product development.)

Once the basic concepts have been mastered, a programmer can enjoy a much higher degree of productivity and creativity than is possible on any machine at any price. Once the first application has been successfully written, debugged and shipped, subsequent products come very fast.

While it is true that a first Macintosh product takes some time to complete, the Macintosh architecture was developed with the idea of making it easier and faster to write programs. With conventional microcomputers, programmers are required to create the entire program from scratch, including not only the underlying computational code (for example, the number-crunching part of a statistics program), but also the entire user-interface.

From a marketing perspective this results in a universe where all programs operate differently, with little resemblance to how the same task would be performed manually in the real world. This makes things tough for programmers who would rather concentrate on the specifics of their applications; yet it makes things even tougher for the unfortunate user who must learn a bewildering array of new commands for every program purchased. Ultimately this affects the entire industry, since consumers are less likely to buy new products to solve their problems if they have to learn a completely new and unfamiliar environment for every program purchased.

Apple believes that programmers shouldn't have to deal with this scenario and that users shouldn't have to put up with a confusing, diverse world of command sequences. Alain Rossman, Macintosh Software Evangelist Manager, says that Macintosh software is actually a metaphor for real life. When you develop a Macintosh program you are creating a software illusion; the illusion is that of a small universe behind the Macintosh screen where objects behave in predictable ways governed by natural laws, just as real objects do. And if you think of how the Finder handles folders, how *MacWrite* handles tabs, and how *MacPaint* deals with artist tools, the metaphorical nature of the Macintosh program should be clear.

To implement this universe consistently, the Macintosh architecture provides the programmer with most of the objects for this little universe (windows, menus, graphics, dialog boxes, scroll bars) and also provides the natural laws for how they should behave. Most of these objects and laws are contained in a 64K ROM chip that is part of the Macintosh circuit board. Others are RAM based.

In total there are over 700 predefined routines for the Macintosh programmer that remove the burden of having to reimplement a user interface for each application developed. It's quite a challenge to learn how to most effectively learn these routines, but the results for the programmer and the consumer are quite worthwhile.

In addition to learning these routines, the Macintosh programmer must often completely rethink the entire concept of a computer program. Most conventional computer programs are simply sequences of computer instructions that must be carried out in some predefined order. The proper Macintosh program, however, must adhere to the real life metaphor and make no assumptions about what the program user may or may not do at any given point.

We call this "event-driven" programming. At any given time the Macintosh user may strike a key, click or move the mouse, insert a disk, pull up a desk accessory, change font sizes, and so on. In real life our actions aren't dictated by rigid laws, and such is the case with the Macintosh program. The user should be in control, not the program.

How do I use modeless dialogs when I'm writing my own desk accessories?

[*Answer by Russ Daniels of Macintosh Technical Support*]

When a desk accessory creates a window (including a modeless dialog window) it must set the windowKind to its refnum—a negative number. When the application calls GetNextEvent, the Event Manager calls SystemEvent, which checks to see if the event belongs to a desk accessory. SystemEvent checks the windowKind of the frontmost window, and uses the (negative) number for the refnum to make a control call, giving the desk accessory a shot at the event. Then SystemEvent returns True, and GetNextEvent returns False.

So your desk accessory gets an event from SystemEvent. Since your window is a modeless dialog, you call IsDialogEvent, which mysteriously returns False. What gives?

Like SystemEvent, IsDialogEvent also checks the windowKind of windows in the window list, looking for dialog windows. It does this by looking for windows with a windowKind of 2. In this case, it finds none, and does nothing.

The solution is to change the windowKind of your window to 2 before calling IsDialogEvent. This allows the Dialog Manager to recognize and handle the event properly. Before returning to SystemEvent, be sure to restore the windowKind. That way, when the application calls the Dialog Manager with the same event (the application should pass all events to Dialog Manager if it has modeless dialogs), the Dialog Manager will ignore it.

I'm interested in writing software for the Macintosh. What development language would you recommend?

When the Macintosh was introduced, you really only had two choices: Lisa Pascal or Microsoft BASIC. Today there are over 25 languages available for the Macintosh programmer. In the "early days" almost all commercial Macintosh applications were developed using a Lisa and Lisa Pascal. A recent developer survey now shows that over 50 percent of our developers are using native Macintosh languages for their development efforts.

So which one is right for you? There's not one right answer to this question but you can help make the right decision by asking yourself a few questions:

First, what's your level of expertise?

Programming is an art and the Macintosh has raised that art to new standards. But you'd better be able to draw before you paint portraits.

I'd recommend an interactive, interpretive language for the novice programmer. Products like *Macintosh Pascal, Microsoft BASIC* and *Hippo C Level 1* fit the bill perfectly. They are very forgiving, and let you at least get some instant gratification. They'll also let you take advantage of the graphic features that make the Macintosh so special.

For the intermediate and advanced programmer there are several excellent "industrial-strength" development languages including the *Macintosh 68000 Development System, Consulair C, Megamax C, Aztec C, MacFortran* from Absoft and *MacCobol* from Micro Focus. Make sure that you choose a language that is geared to your level of experience.

Second, what are you trying to accomplish?

If you expect the end result of your product to be a commercial application it's best to stay with a language that produces compiled code. Your finished product should not rely on the availability of an interpreter.

Some developers may not need programming languages at all. If you're are trying to set up a special application only for your particular business or a special vertical market you might choose to go with a good database program instead. Products like *Omnis 3* and *Helix* will allow you to create sophisticated applications much easier and faster than starting from scratch.

Finally, how self-sufficient are you?

Support is a critical ingredient for any product. If you feel you're going to require a lot of handholding, make sure that you feel comfortable with the level of support offered by the language company you choose. Find out if it supplies telephone support, newsletters or updates. Nothing can be more frustrating than spending months of development time working with a language and/or company that's headed for the rocks.

If you're still confused about where to begin talk to other Macintosh programmers, user groups, or drop me a line in care of **MacUser**.

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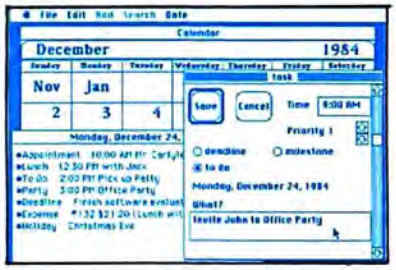
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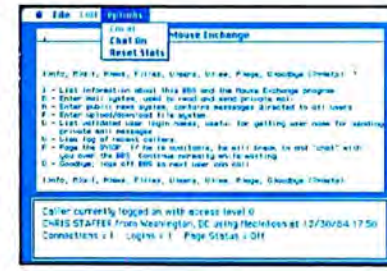
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Day Keeper™ Calendar. This program helps you organize your day to day appointments, goals, expenses, and customer billing. It makes personal time management easy with flexible reporting and sophisticated searches. Day Keeper is designed for the individual who needs easy and complete time accounting. *Works on the 128K Macintosh, and with 'Switcher' — takes advantage of the larger screen on the Macintosh XL.* "One of the finest application programs on the Mac; a bright, breezy bit of programming whose very friendliness and usability belie the underlying complexity of the programming and power of technique." **— Neil Shapiro, Sysop MAUG.** "Day Keeper is a pure calendar-oriented program, a single application = lower cost...the programmers were able to focus all attention to the detail of 'the calendar,' so the application itself exhibits a jewel-like polish in its operations" **— The MACazine, May '85.**

Mouse Exchange™ BBS A remote bulletin board system that has security for private mail, plus a public news system. Upload and download files in ASCII, XMODEM, or MacBinary. It uses multiple windows. *Works with the 128K Macintosh, requires an Apple, Hayes, or US Robotics modem.* "...(Mouse Exchange BBS) is already a classic in telecommunications." **— The MACazine, April '85.** "Almost all of the Mac boards that are up use this package." **— John Dvorak, Infoworld, June '85.**

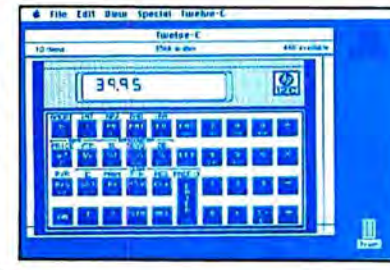


Mouse Exchange™ Terminal. This program is a simple, yet sophisticated terminal emulator from the people who brought you 'Free Term' on Apple's software supplement. It emulates multiple types of terminals, has a built-in screen editor, and easy-to-use macros and dialer functions. Upload and download in ASCII, XMODEM, and MacBinary. *Works on the 128K Macintosh, and with ALL modems.*



Quick & Dirty™ Utilities Volume One and NEW! Volume Two. Both disks are full of useful desk accessories and application tools. Volume One has 16 different utilities, including VT52 and XMODEM terminal desk accessories, super note pad, font manager, disk cataloger, and much more! Volume Two includes an editor desk accessory, a BASIC desk accessory, a pie & bar chart creator, mass disk copier, desk accessory maker, and many other goodies! *Some individual utilities may require 512K RAM.* "Now, let it be said that 'Quick & Dirty' has nothing to do with how these utilites act or are programmed. Instead, it seems to mean that they're quick to use and they get the job done without many flourishes but with a good, workmanlike attitude." **— The MACazine, April '85.** "Quick & Dirty Utilities is a disk chock full of the handiest programs you have ever bought...you'll wonder how you got along without (them)." **— MacUser, Premiere Issue '85.**

NEW! Twelve-C™ Financial Desk Accessory. This desk accessory exactly emulates the Hewlett-Packard 12C Financial Calculator, including programming! Whether you're in business school or on your way to your first million, you'll find this to be the perfect analysis tool. A must for people in the world of finance, real estate, and investment. *Works on the 128K Macintosh.* "Dreams of the Phoenix has the answer for all of us who just can't give up that special financial calculator." **— MacUser, Premiere Issue '85.**



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MINIFINDERS

Ever go into a computer store and wish you had someone you could trust tell you what the various programs and accessories do and how well they do it? These MiniFinders detail items chosen by the editors. Each one has been rated from one to five mice and there are even a few bomb icons scattered here and there. Next time you have to find products you can count on, count on MacUser!

COMMUNICATIONS/NETWORKING

InTouch is a full-featured telecommunications program. It has its own communications command language (the most powerful in any Mac comm program) that lets you do complete unattended sessions. Supports Xmodem, MacBinary and Kermit. Has a macro key function. Ease of use is increased by the large number of communication documents and sample command language files provided. $149. Software Masters, 3330 Hillcroft, Suite BB, Houston, TX 77057.

MacTerminal provides basic telecommunications and terminal emulation for the Mac user. It emulates DEC VT100s, IBM 3278s and plain teletypewriters (TTYs). Its usefulness as a telecommunications package is somewhat limited since it does not have macros nor any sort of auto redial/auto logon capability. It is really for those people needing faithful VT100 or IBM 3278 emulation—it is superb at those. $99. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014.

Mouse Exchange BBS turns your Mac into an electronic bulletin board system. Allows private electronic mail, public message areas and file distribution. Users can be granted different access levels and password security is supported. Supports Xmodem and MacBinary file transfers. External drive or hard disk recommended. $39.95. Dreams of the Phoenix, Inc., PO Box 10273, Jacksonville, FL 32247.

Smartcom II balances power and ease of use. This terminal program is capable of unattended operation and has a very powerful command language. Capable of real-time graphics when run on a 512K and connected to a 512K Mac. Supports MacBinary, Xmodem, and Hayes Verification protocols. The large screen buffer can easily be archived both to the printer and to disk. All in all, this is a very complete program marred only by its lack of keyboard macros. $149.00. Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092.

Straight Talk by Dow Jones is a simple, straightforward communications program that includes a link to the Dow Jones News/Retrieval Service (DJN/R) and other major online services. It can be configured to 300 or 1200 baud and accommodates most DJN/R telecommunications needs. Included with the software is a free password to the Dow Jones network and one hour of unrestricted use. $79.00. Dow Jones & Co., Inc., PO Box 300, Princeton, NJ 08540.

Telescape is the power telecommunicator's terminal program. It can be configured to emulate any terminal and has all the advanced features (except unattended operation). Features include a small electronic mail–miniBBS option. Unfortunately the documentation does not adequately explain the features and much of the power will be unavailable to all but the pros (who can figure it out on their own). $125.00. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301.

VersaTerm is a power telecommunications program. Features include DEC VT100 and VT52, Tektronix 4014 graphics terminal and Data General D200 emulation. File transfer protocols supported include Xmodem and *Macterminal* Xmodem. The MacBinary standard is implemented. Auto redialing and auto logon facilities are included, and users can create a directory of frequently called phone numbers. *VersaTerm* is easy to use and well documented. $99.00. Peripherals, Supplies & Computers, Inc., 215 Mt. Penn Ave., Perkiomen, PA 19606.

1stPort is meant as a data transfer package and is superb at that function. It can handle many document formats, including SYLK, DIF, *1stBase* and plain vanilla ASCII. The documentation is clear and precise. The program is also more than adequate as a simple terminal emulator. It supports Xmodem transfers. Another feature is a built-in text editor, which makes this program easy to use with remote message and Email services. $95.00. DeskTop Software Corp., 244 Wall Street, Princeton, NJ 08540.

DATA FORMATTING

Microsoft Chart is the standard to be matched in presentation graphics programs. Users can easily create area, bar, column, line, pie, scatter and combination charts. A total of 42 styles are provided. Data can be exchanged with other Microsoft products and charts can be pasted into *MacDraw*, *MacPaint* and *MacWrite*. Has on-screen help. Limited to 100 data items (64 in a series) on a 128K Mac, approximately twice that on a 512K Mac. $125. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98009.

PFS:File/Report is a package of two programs on one disk. *PFS:File* is a reliable, easy to use text database. It can be used to design simple forms, maintain employee records, and in concert with *PFS:Report*, can generate reports in list format or as designed forms. *File/Report* was an early entry into the Macintosh software market. There are presently much more powerful and versatile products available in the database category. $125.00. Software Publishing Corporation, 1901 Landings Drive, Mountain View, CA 94043.

EDUCATION

ChipWits is a combination game and teaching tool. Players create programs to maneuver robots through a set of eight mazes. The programs are written in *ChipWit's* built-in, icon-based programming language (iBOL). IBOL is a nearly perfect introduction to programming for nonprogrammers. $49.95. BrainPower, Inc., 24009 Ventura Blvd., Calabasas, CA 91302.

MacCoach introduces Macintosh's system components, philosophy, desktop metaphor, use of disks and recurring operations. On two disks, it comes with eleven pages of documentation, follows very standard techniques of interactive learning. Clever graphics at times, yet misses such basic points as recognizing a second disk drive. For Mac, seems unnecessary. $75.00. American Training International, 12683 Beatrice Street, Los Angeles, CA 90066.

MacEdge and MacEdge II each contain eight reading or math drill programs for basic skills. Programs follow one of three formats, a bit contrived. Contrivances are design flaws—they require learning format as well as skill. Exception is Alphabet Train, a clever game with great graphics and sound, poor font definition. *MacEdge* and *Edge II* offer average educational value, can be fun to play. $49.95 each. Think Educational Software, 16 Market Street, Potsdam, NY 13676.

MasterType is proof that learning to type can be fun. In this arcade-style

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action game words descend from four corners towards the center ship; the user must type them correctly. Features 18 skill levels, tracks errors, recommends lessons and provides comparison scores. $49.95. Scarborough, 55 South Broadway, Tarrytown, NY 10591.

Mind Prober is a demonstration of a very simple expert-style system. How well do you know your friends? Answer certain statements as either true or false, and the computer prints a 3- to 5-page psychological profile of subject in business, stress, sex and other situations. $50. Human Edge Software Corp., 2445 Faber Place, Palo Alto, CA 94303.

Think Fast allows users to improve their recall and recognition abilities. Tests include compare, copy and recall exercises. Users chose the level of difficulty, speed and risk-taking. Has session and summary reports to provide feedback and permanent records. Good for users of all ages. Children will find it fun. The manual is very clear. $39.00. BrainPower, Inc., 24009 Ventura Blvd., Calabasas, CA 91302.

Turbo Turtle is a turtle graphics program primarily designed as a learning tool for children. It uses Logo commands for graphics, but is not a full implementation of Logo. Commands and common operations are displayed on pull-down menus, executed in a graphics window as they are entered. Procedures can be written and combined for complex designs and recursive operations. Simple to use, good introduction to Logo for young children. $59.95. Hayden Software, 600 Suffolk Street, Lowell, MA 01854.

ENTERTAINMENT

Airborne is a classic arcade-style game with "real" sound effects. The player sits at a gun position on a low rise and defends against assault from planes, helicopters and other flying enemies. Troops and tanks land and attack across the desert that spans the screen to the right. Game noises, digitized from actual recorded sounds, add to the game even though they lose much in translation. $34.95. Silicon Beach Software, 11212 Dalby Pl., Suite 201, San Diego, CA 92126.

Balance of Power: The world's first computer peacegame, this astonishing simulation allows the player to become President of the United States or General Secretary of the Soviet Union. During an eight-year term of office, the player tries to expand his superpower's sphere of influence while avoiding nuclear war. Extraordinary artificial intelligence routines and general play of the game make this game a true classic. Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60022.

Baron is the world of real estate, as seen through a financial simulation. Buy and option properties in five key areas; invest in industrial, residential or land property; or put cash aside in high-interest accounts. $59.95. Blue Chip Software, 6740 Eton Avenue, Canoga Park, CA 91303.

Felony: Sequel to *Murder By the Dozen.* Twelve mystery games in a package. One or more players visit various clue sites, deciphering numbered clues with the enclosed booklet. The first one to solve the case wins. $44.95. CBS Software, One Fawcett Place, Greenwich, CT 06836.

Forbidden Quest is a text adventure with pictures. Begins in a spaceship, with you in extreme danger. Indications are that if you don't do something very quickly, you will die a horrible death. The game provides several levels of on-line help, from simple hints to actual solutions. The disk is accompanied by five graphic prints, called Artext™, of specific scenes with hidden clues. Very playable if a bit mundane. $44.95. Pryority Software, 635 Sanborn Rd., Suite 22, Salinas, CA 93901.

Gateway, another Artex™ game, comes with three full-color prints. You inherit a boring old building from a supposedly rich uncle, eventually learning that the building is a "gateway" to a lost civilization. You must find the gateway and cross though. Outcome is determined by choices made along the way. Both *Forbidden Quest* and *Gateway* have pull-down menus for conditions, inventory and game operations. $49.95. Pryority Software, 635 Sanborn Rd., Suite 22, Salinas, CA 93901.

Gato puts you in command of an American submarine in World War II. This superb simulation game uses all of the Mac's graphic capabilities to really make players feel that "you are there." The game comes with 20 missions and gamers can create (in detail) up to ten custom-made missions. $39.95. Spectrum Holobyte, Inc., 1050 Walnut St., Suite 325, Boulder, CO 80302.

Legacy is an illustrated text adventure on two disks (Parts One and Two). A magical orb in Drab Castle must be found through the use of spells and careful adventuring. Two disks needed for graphics, not a longer game. $39.95. Challenger Software, PO Box 1478, Homewood, IL 60430.

Lode Runner: This 150-screen action-strategy challenge requires a joystick for truly effective play. Move around a grid of ladders and platforms collecting treasure; dig a hole to trap pursuers. When you finish (!!) all the screens, an option lets you build your own challenges. $39.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903.

MacAttack puts the player in command of a super tank defending the wastes of Alaska against invaders. This exciting 3D simulation pits you against attacking tanks and warplanes that fire heat-seeking missiles. Defeat the horde to be treated to a graphic fireworks display over the grateful town. $49.00. Miles Computing, Inc., 7136 Haskell Ave., Suite 212, Van Nuys, CA 91406.

MacBackgammon with Cribbage provides graphic versions of these classic games. Variable skill levels allow the user to set game difficulty. At the expert level both games will challenge experts. The graphics are attractive but slow the games down quite a bit. $49. Videx, Inc., 1105 Northeast Circle Blvd., Corvallis, OR 97330.

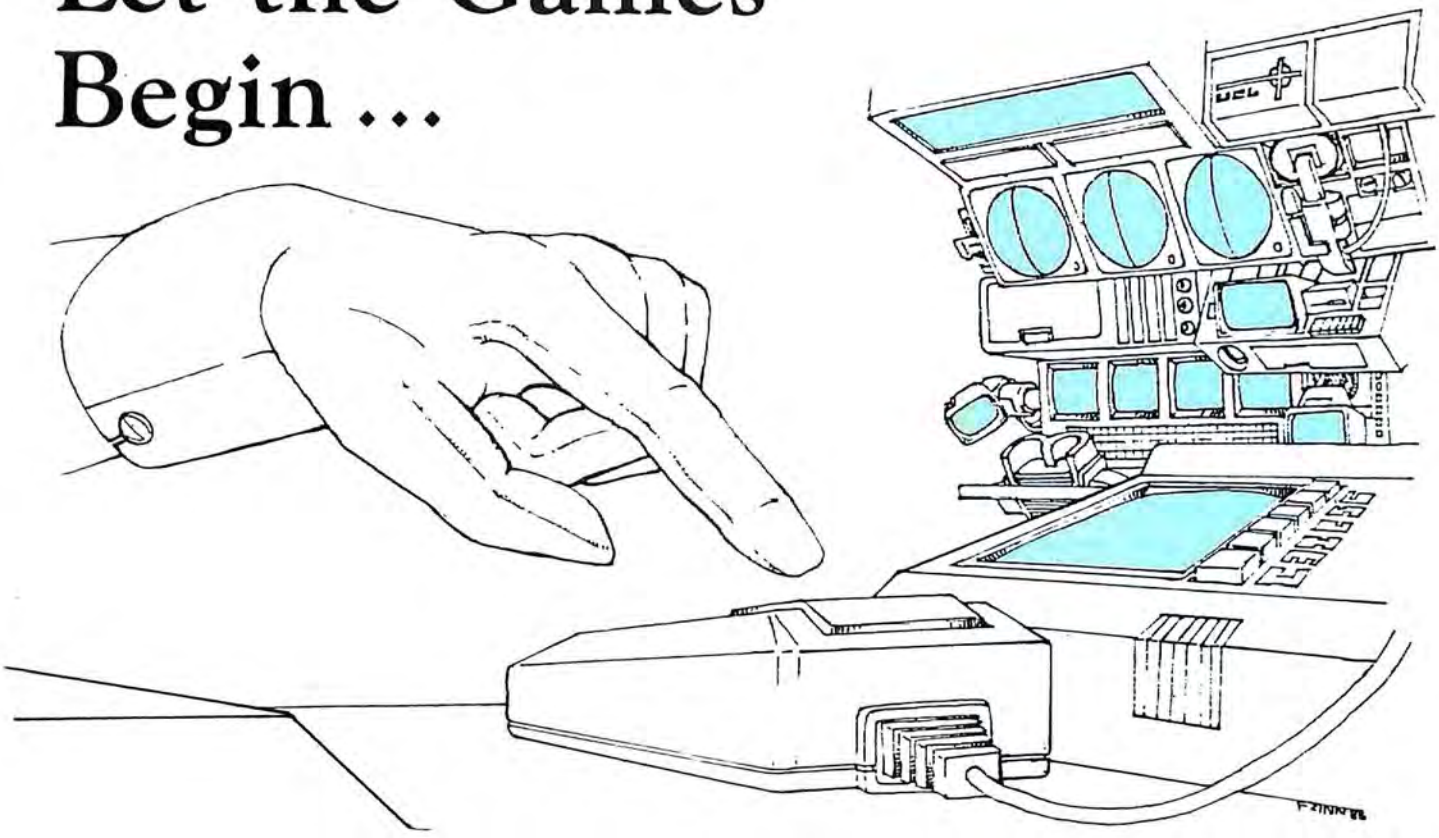
MacChallenger lets players land a space shuttle at either Cape Kennedy or Edwards AFB. The graphics of this flight simulator are crude and it's a hard machine to fly, but it's also a lot of fun. Version 2.0 records your landing attempt (that's what most of them are!) and then reviews it from any of ten camera angles, a truly unique touch! $49.95. Aegis Development, Inc., 2210 Wilshire Blvd., Suite 277, Santa Monica, CA 90403.

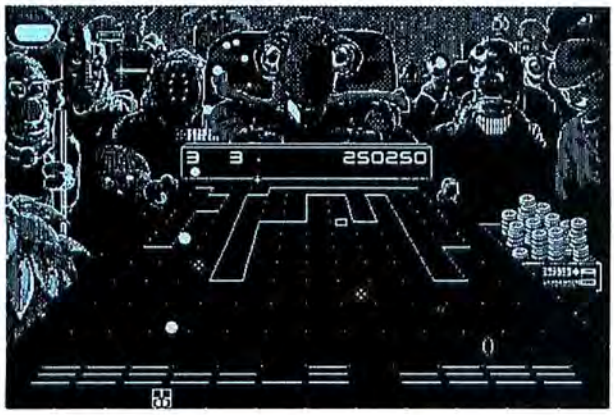
MacCheckers with Reversi will provide a stiff challenge to experts. Adjust the degree of difficulty to your taste. The graphics and animations are excellent, though somewhat slow. The checkers portion can be very hard to beat when the skill level is set to expert. The reversi (which is very similar to Othello) is somewhat easier, even at the expert level. $49. Videx, Inc., 1105 Northeast Circle Blvd., Corvallis, OR 97330.

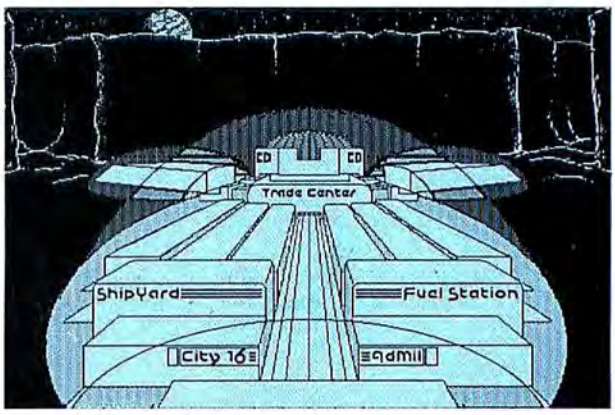
MacManager: Up to nine players compete to see who can gain the largest share and profits in the widget industry. Make the right decisions early on and the game plays itself. Tiresome at best. $49.95. Harvard Associates, 260 Beacon Street, Somerville, MA 02143.

MacVegas contains seven complete casino-style games: baccarat, blackjack,

Let the Games Begin ...







Grid Wars™

Your opponent waves its tentacles in the smoky barroom air, unleashing wave after wave of bizzare soldiers across the three-dimensional playing surface. You respond with your arsenal of weapons; fighting them off barely in time to face the next attack. If you fail, you buy the drinks. $39.95

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Society is decaying around you. In your custom-designed space ship, you cross the war-torn world, bartering supplies between the isolated cities, and fighting the enemy forces in the barren canyons between. Your efforts are all that hold together the last remnants of civilization. If you fail, your world dies. $49.95

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craps, keno, poker, roulette, and slots. All are fairly standard but generally well designed. House rules can be altered by selecting establishment from a menu. Can also jump from game to game or find current status in a similar manner. The games are all fun to play, but not particularly absorbing. $59.00. Videx, 1105 NE Circle Blvd., Corvallis, OR 97330.

Make Millions is a fascinating business simulation in which the player competes against the computer to take control of five companies, then run them profitably. Different strategic options and human-seeming associates make simulation more complete. Appeals to the closet capitalist in all of us. $49.95. Scarborough Systems, Inc., 55 South Broadway, Tarrytown, NY 10591.

Millionaire: Financial simulation based on the stock market. "News" affects stock prices, so read it religiously. Turn a pittance into a fortune to win the game. $49.95. Blue Chip Software, 6744 Eton Avenue, Canoga Park, CA 91303.

Mouse Stampede is an infectious Centipede-like game with mice, bats, cheese (normal and moldy), turtles, flies, paint brushes, knives, shopping carts and sneakers on the attack. Activated cats will gobble mice until full. Game is fast-paced, high scoring and generally fun to play. $39.95. Mark of the Unicorn, 222 Third Street, Cambridge, MA 02142.

Murder by the Dozen: Sequel to *Felony*. Twelve new mystery games in a package. One or more players visit various clue sites, deciphering numbered clues with the enclosed booklet. The first one to solve the case wins. $44.95. CBS Software, One Fawcett Place, Greenwich, CT 06836.

NewGammon is animated backgammon program that will challenge even good players. Features include variable skill levels and strategies and options to play the Mac or watch the Mac play itself. Many positions are included so that you can learn how to play them without having to set up a whole game. An arcade-like high speed play mode is also included. This is the best backgammon player currently available. $39.95. Newsoft, PO Box 4035, Newport Beach, CA 92661.

Pensate is a truly mind-challenging strategy game. The object is move your piece eight squares while avoiding contact with lots of other pieces that move in various patterns. There are multiple levels of difficulty and a play ahead feature, where the player must plan moves in groups of up to four turns. Graphics are very well handled, and the challenge is addicting. $39.95. Penguin Software, PO Box 311, Geneva, IL 60134.

Planetfall: Shipwrecked on a seemingly deserted planet, you have only Floyd the droid to help figure out how to get home. Two possible endings. This full-text game is written in a tongue-in-cheek style. Full text. $39.95. Infocom, 55 Wheeler Street, Cambridge, MA 02138.

Pyramids of Peril: Action-strategy adventure in which a single explorer must unravel the mysteries of the pyramid. Computer maps automatically; combat is engaged in with the mouse. $39.95. Aegis Development, 2210 Wilshire Blvd., Suite 277, Santa Monica, CA 90403.

Real Poker is five-card draw against five other players with Old West names, distinct personalities and playing styles, in saloon setting. Game has three playing speeds. Dealing and play are very fast. Betting and play options shown on buttons. Game evaluates your hand, suggests cards to keep/discard. These features also accelerate play. Dynamic, exciting, addictive game. $39.95. Henderson Associates, 980 Henderson Ave., #1, Sunnyvale, CA 94086.

Sargon III is a capable chess program with 9 levels of play, and includes problem solving modes, take back, change color, hint, manual play, etc. Easy Play option blocks *Sargon* from stealing search time during player's move, effectively doubling number of levels. Pieces are moved graphically. Windows display search process, numeric evaluation of *Sargon's* position, and move history. Disk stores 107 classic games for review and replay. $49.95. Hayden Software, 600 Suffolk Street, Lowell, MA 01854.

Squire is a financial simulation that features a unique, real-life mode that lets you set your own financial goals, then play out your strategy using IRAs, stocks, commodities, collectibles and property. $69.95. Blue Chip Software, 6740 Eton Avenue, Canoga Park, CA 91303.

The Witness: Full-text adventure casts the player as a detective assigned to get to the bottom of a death threat. When the victim is killed, you have only one night to find the real guilty party. Different things happen in each of the house's rooms, so stay alert to all possibilities. Full text. $39.95. Infocom, 55 Wheeler Street, Cambridge, MA 02138.

Trivia has questions in Sports, History, Geography, Literature, and Entertainment categories, on-line instructions and playing options. Up to six players compete. Players set time of response, target score for win. Player answers question verbally from one of three levels, checks answer, then hits Correct or Incorrect button. Categories limited, questions replay if game not saved. Own questions can be converted from *Word* or *MacWrite* files. Additional question disks "in preparation." $24.95. Mirage Concepts, 4055 W. Shaw, #108, Fresno, CA 93711.

Tycoon is a financial simulation based on the ups and downs of commodities market. Build a fortune in pork bellies and Swiss francs, checking the "Financial Journal" for news affecting the market. $59.95. Blue Chip Software, 6740 Eton Avenue, Canoga Park, CA 91303.

Ultima II: A single character travels through land, sea, air, space and even time itself in a quest to find and defeat the evil sorceress Minax. Good Mac interface; excellent game in spite of confusing graphics. $59.95. Sierra, 36575 Mudge Ranch Road, Coarsegold, CA 93614.

Ultima III: Up to four characters cooperate to explore the vast wilderness of Sosaria; dungeons, oceans and the Moon Gates help solve the adventure. Outstanding translation of the Apple II smash hit. Origin Systems, 340 Harvey Road, Manchester, NH 03103.

Webster's Revenge is a *Boggle*-like word search game. Super graphics make it a pleasure to play. The dictionary is adequate and the user can always overrule it if necessary. Multiple skills levels make this a game for all. $34.95. Shapechanger Software, Inc., 113 E. Tyler, Athens, TX 75751.

Wizardry: Outstanding dungeon exploration adventure pitting a party of up to six characters against the guardian monsters of the evil wizard Werdna. Capture his amulet to earn your reward. Even after solving the game, you'll want to go back into the dungeon. $59.95. Sir-Tech Software, 6 Main Street, Ogdensburg, NY 13669.

Word Challenge is a *Boggle* lookalike. Features multiple (26) skill levels and an extensive dictionary. Even "pro" *Boggle* players should find a level that will challenge them. The game plays well, marred only by the poor graphic implementation of the playing field. $39.95. Hayden Software, 600 Suffolk St., Lowell, MA 01854. • •

Xyphus: Role-playing game pits four characters (fighters or wizards) against multiple scenarios that grow increasingly harder. Excellent Mac interface and icon con-

trol. $39.95. Penguin Software, 830 Fourth Avenue, Geneva, IL 60134.

Zork I: Full-text adventure game lets players explore a strange underground empire. Parser understands full sentences; players can take many different routes to final success. Beware of the thief, who steals random objects. The ultimate text game. $39.95. Infocom, 55 Wheeler Street, Cambridge, MA 02138.

Zork II: The adventure continues in the underground empire. A wandering wizard keeps things interesting, though there's a way to beat him if you persevere. $44.95. Infocom, 55 Wheeler Street, Cambridge, MA 02138.

Zork III: The final chapter in the trilogy. Players come up against the ultimate enemy—the Dungeonmaster himself. More closed-ended than previous Zorks. $44.95. Infocom, 55 Wheeler Street, Cambridge, MA 02138.

GRAPHIC & DESIGN

Animation Toolkit I lets you prepare "film clips" of moving objects that play back at varying speed, like old-fashioned flip books. Drawings are built pixel by pixel in frames, using some of the tools from *MacPaint*. They can be copied and altered easily from frame to frame. Each film clip plays repetitiously as it is being constructed. A limited animation tool, but a lot of fun. $49.95. Ann Arbor Softworks, 308½ S. State St., Ann Arbor, MI 48104.

ClickArt Special Effects is a *MacPaint* enhancement desk accessory. Allows the user to distort, stretch, rotate and use perspective on *MacPaint* documents. A necessary addition for all serious users of *MacPaint*. $49.95. T/Maker Company, 2115 Landings Drive, Mountain View, CA 94043.

DaVinci Building Blocks features predrawn blocks of street, brownstone, garden and skyscraper portions that can be cut and pasted together to form landscape and architectural drawings. Fun for even non-pro's. $79.95. Hayden Software Company, Inc., 600 Suffolk Street, Lowell, MA 01853.

DaVinci Commercial Interiors is a professional-level package of layout aids for interior designers and architects. Features predrawn office sections with furnishings included as a font that the user installs into a System file. $199.95. Hayden Software Company Inc., 600 Suffolk Street, Lowell, MA 01853.

Fontastic is the best font editor now available for the Mac. Features a large editing window with a grid to make positioning easy. Select letters to edit by clicking on a matrix of the font. Allows scaling of existing fonts and previewing the various styles (italic, bold, shadow, underline and outline). Version 2.0 improves an already excellent product. $49.95. Altsys Corp., PO Box 865410, Plano, TX 75086.

Human Forms allows users to create perfectly proportioned humans in any posture or position. Tiny X's mark make limb, head, and detail placement perfect. Requires *MacPaint*. $79.95 The Reference Corporation, 212 Fifth Avenue, New York, NY 10010.

Icon Switcher changes icons for applications and the documents they generate, permitting the user to customize icons for personal work. New icons can be built pixel-by-pixel in the program or created in *MacPaint* and pasted in from a scrapbook. *Icon Switcher* looks something like *Font/DA Mover*, using arrows to copy, move or replace icons. Generally easy to use. $19.95. PBI Software, 1155B-H Chess Drive, Foster City, CA 94404.

Mac the Knife/Vol. 1: Sampler contains over 500 pieces of clip art in the form of *MacPaint* documents and two new fonts. The art is well organized and mostly high quality. The rulers (to measure things on your *MacPaint* screens) and the disk label templates are particularly useful. If you only plan on getting one clip art disk this would be a good choice. $39. Miles Computing, Inc., 7136 Haskell Ave., Suite 212, Van Nuys, CA 91406.

Mac the Knife/Vol. 2: Fonts contains over two dozen new fonts. Some of these (Paris and Stuttgart, for example) are real stunners. If you do a lot of word processing try Paris 9 point (it's a big 9 point) as your text face and use High quality printing. Some fonts have single key fractions (½, ¼). $49. Miles Computing, Inc., 7136 Haskell Ave., Suite 212, Van Nuys, CA 91406.

Maccessories Professional Type Fonts comes in two flavors: text and headline. Both sets consist of 16 digitized fonts, very similar to commercial typefaces. These extremely clean fonts are among the best available. The Text set comes in sizes ranging from 12 point to 24 point, while the Headline fonts are from 24 point to 72 point. The large fonts have to be seen to be believed; they're really good. Some of the very large (48 and 72 point) fonts will only work on a 512K Mac (they take up lots of memory!). $49.95 Text (1 disk). $69.95 Headlines (2 disks). Kensington Microwave, 251 Park Avenue South, New York, NY 10010.

MacDraw is an object-oriented structured graphics program. Can be used to design forms, create presentation materials and do technical illustrations. Drawing sizes up to 8 feet by 10 feet are possible. Text can be easily generated and integrated in the graphics. *MacPaint* documents can be pasted into *MacDraw* documents, but not manipulated. $195. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014.

MacPaint is the graphics program that started a whole new genre. Still the best freehand graphics tool. Version 1.5 supports 512K Macs and the LaserWriter. Multiple tools, patterns and features too numerous to describe. A work of art for artists. Comes with Macs. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014.

MacPublisher is a tool for creating newsletters. Allows multiple page issues. Layout is fairly easy but hard to do precisely. Text must be entered via the keyboard, a serious drawback, and style and font changing ability is limited. Runs on a 128K Mac but is slow; a 512K should be considered a requirement. Printer support, including LaserWriter, is good. Ideal for informal newsletters, not yet a professional tool. $99.95. Boston Software Publishers, Inc., 19 Ledge Hill Road, Boston, MA 02132.

ReadySetGo is a page makeup program for 512K Macs. Users build up pages from blocks of text, graphics and rules. Resizing and scaling of blocks are supported. Each block can be precisely positioned. Works on single pages at a time. Text may be pasted in from another source or created within the program. Art can be created in *ReadySetGo* or imported from other Mac applications. Good LaserWriter support; a huge range of type sizes can be selected and printed. $125. Manhattan Graphics, 163 Varick Street, New York, NY 10013.

Slide Show Magician lets users easily design and show their own text and art presentations in the form of a "slide show." The program accepts documents created in *MacWrite* and *MacPaint*, plus any clip-art style graphics helpers. Movielike special effects options include wipes, barn doors, venetian blinds and fades. An option lets users install working buttons

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on the screen. $59.95. Magnum Software, 21115 Devonshire Street, Suite 337, Chatsworth, CA 91311.

Talkshow allows pictures, graphics, and speech to be combined in a single document. Unfortunately the components are so crude and the integration and implementation so poor that the program is of no value except as a curiosity. The skimpy documents do not begin to explain the program. $149.00. Software, 80 Eureka Square, Suite 214, Pacifica, CA 94044.

Underware Ribbon allows users to create *MacPaint* images and transfer them to cloth, typically to t-shirts. Fairly easy to do, although care is required. The transferred images can be colored using the special pens provided. Set of a ribbon and five colored pens $24.95. Underware Diversions, Inc., 1550 Winding Way, Belmont, CA 94002.

VideoWorks is a full-featured animation package. Professional quality animations are easily accomplished using the tools provided. Features frame-by-frame and real-time modes. Comes with an art disk of predrawn images and *Art Grabber* (which allows the user to use any part of a *MacPaint* document in *VideoWorks*). Includes many special video and sound effects, excellent manual and many on-disk examples. $99.95. Hayden Software Company, Inc., 600 Suffolk Street, Lowell, MA 01854.

HOME APPLICATIONS

Day Keeper Calendar is the ultimate computerized appointment and note book, the *Day Runner* of computers. Holds a year's worth of information in each calendar document (you can have several). Starting from the basic display of a whole month, users can easily see details of days and individual entries of many sorts. If you need a computerized appointment book this is it. $39.95. Dreams of the Phoenix, Inc., PO Box 10273, Jacksonville, FL 32247.

Dollars & Sense is a bookkeeping program suitable for personal, home and small-business use. Easy to use, with a good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Seven kinds of reports can be generated and either viewed on-screen or printed. Simple graphing and charting facilities are included. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301.

Electric Checkbook does exactly what the name says: keeps a running account of checkbook transactions, balances checkbook to bank statements, tracks bills and even prints out checks, if you wish. The program provides detailed financial statements, calculates net worth, lists expenses by category, and tracks personal cash flow. A good, full-featured program. $79.95. State of the Art, 3191-C Airport Loop, Costa Mesa, CA 92626.

Financial Cookbook: Nearly 3 dozen "recipes" help users figure out financial formulas (e.g., mortgage costs at different percentage rates) by inputting pertinent data. Very user-friendly. $44.95. Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403.

Front Desk is a program lets small businesses and offices easily keep track of personnel schedules, activities and payments. The program can keep track of up to 15 employees, functioning as a day-, week- and month-at-a-glance calendar. Highly recommended for doctors and dentists' offices. Less useful for offices less dependent on the human factor. $149.95. Layered, Inc., 85 Merrimac Street, Boston, MA 02114.

I Know It's Here Somewhere stores information in a simple card filing system. Ideal for hobbyists and collectors, general household or small business use. File formats are flexible and 31 samples are included. Program can cut and paste between files; display and cross reference up to five files at a time; perform simple, wild card or multiple key searches, and print selected items or whole files. $59.95. Hayden Software, 600 Suffolk Street, Lowell, MA 01854.

MacLabeler lets users instantly index and print labels for all the disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of blank labels is included. $49.95. Ideaform, Inc., PO Box 1540, Fairfield, IA 52556.

MacMuscle is a fitness program that allows users to generate a weekly workout schedule to help keep track of excercise progress. Features include a detailed chart of the human body and its 24 major muscle groups in both technical and common names. An animated figure demonstrates the primary exercise on the exercise menu. Calculates training pulse range, which is demonstrated by an animated heart with audio effects. *MacMuscle* is a limited program that places great emphasis on weight training. $89.95. Tech 2000 Software, Inc., 263 Lugonia Street, Newport Beach, CA 92663.

MacOffix combines many of the simple and necessary office functions in one easy-to-use package. Features include simple word processing, forms design, form letter production, report generation and filing. Good design nearly makes the manual unnecessary. $149.00. Emerging Technology Consultants, Inc., 1877 Broadway, Boulder, CO 80302.

My Office lets you handle your files and papers in much the same way you did before you got a computer. Now your folders and files are all in the computer and anything can be found, or printed easily. Excellent use of graphic symbols makes this program the easiest to use of its type. $129.95. DataPak Software, 14011 Ventura Blvd., Sherman Oaks, CA 91423.

Rags to Riches small-business accounting has three integrated modules: General Ledger, Receivables and Payables. Each can handle 5,000 accounts and 10,000 transactions. Runs on single drive, 128K but 512K or more, two drives advisable. Simple to use, effective use of menus, windows, and mouse operations. RAM-based, *R to R* includes context-sensitive help and supports LaserWriter, AppleTalk, all third party hard disks. Brilliant in operation, documentation and design. $199.95 each. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129.

Smoothtalker trains your Mac to say anything you want. Users can program the pitch and tone of each syllable to simulate true speech patterns. Not too useful—but a lot of fun to play with! First Byte Software, 2845 Temple Avenue, Long Beach, CA 90806.

The Desk Organizer is a free-form desk management system based on card index style files. Has many features including alarms, report generation and calculation. The Meta feature lets the program run along with another application. Early versions had serious bugs; be sure you get a copy with a serial number greater than 8600. $99. Warner Software Inc., 666 Fifth Avenue, New York, NY 10103.

NUMBER CRUNCHING

ClickOn Worksheet is a 50-row by 20-column spreadsheet that loads on any system disk as a desk accessory. Though small in size, it has remarkable capabilities for a desk accessory. It produces line, bar and pie charts, and changes are

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MacNifty Joystick Converter: How would you like to mouse around with a joystick? Sound impossible? Not with a MacNifty Joystick converter. All you have to do is plug in our converter to your mouse port and joystick away. You say you don't have a joystick? Well, we thought that some of you might not, so we've included our own. This nifty little joystick fits nicely in your palm and makes playing games, using spreadsheets or almost any application a real joy. For even more power with your MacNifty Joystick Converter, the hyperwarp control can decide just how fast your cursor moves. For only **$44.95** take control of your mouse.



MacNifty Stereo Music System: To hear or not to hear, that is the question. The answer is the MacNifty Stereo Music System, it will bring out the true power of your Macintosh sound capabilities. The MacNifty Stereo takes the mono sound from your Mac's audio output and produces synthesized stereo separation. The MacNifty Stereo Music System let's you hear the power of the Macintosh in bold studio quality sound for only **$79.95:** Order today and hear what you've been missing.

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reflected automatically from changes in data on the worksheet. Especially useful while working in a word-processing document. The spreadsheet can be copied to the desktop as a *MacPaint* document, opened in *MacPaint*, modified and placed on the clipboard for inclusion in another document. $79.95. T/Maker Company, 2115 Landings Drive, Mountain View, CA 94043.

Multiplan, the first Mac product from someone other than Apple, is beginning to show age. Still a very capable basic spreadsheet with simple sorting, 63 columns by 255 rows, many built-in functions, other standard spreadsheet features. Design conforms well to Mac philosophy, with most functions menu or mouse controlled. Best feature is the ability to link areas of one worksheet to portions of another, in *Multiplan* or *Chart*. $199.95. Microsoft, 10700 Northup Way, Bellevue, WA 98004.

WORD & OUTLINE PROCESSORS

Express contains word processing, mail list and mail merge applications in a single product. Also makes Mac an electronic memory typewriter! A converted PC product that looks as though it were running on a PC. With numbered menus, inability to display style changes on screen. Compromises made in interface to provide features, sufficient text area on 128K Macs. 512K version will be more MacIike. Quick and dirty letter processor that works. $29.95. Mirage Concepts, 4055 W. Shaw, #108, Fresno, CA 93711.

Hayden: Speller checks spelling errors in *MacWrite* and *Word* documents against a dictionary of 20,000 common words and a user-created dictionary. Suspect words appear minifinder style, with changes made in simple dialog boxes. Corrections are typed in or selected from a list generated by the dictionary. Reasonably fast and quite simple to use. Dictionary is small and words cannot be viewed in context while correcting. $79.95. Hayden Software, 600 Suffolk Street, Lowell, MA 01854.

MacSpellRight is a spelling checker that works directly with *MacWrite* 4.5 (not 2.2!). A cursor placed at the start of the document allows scanning from beginning to end. Provides a thesaurus and allows the user to create a custom dictionary. Works from within *MacWrite*. $89.00. Assimilation Process, 485 Alberto Way, Los Gatos, CA 95030.

MacProject allows a user to plan and track a project from beginning to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. Has a very clear manual. $125. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014.

MS Word is *the* power word processor for the Mac. It has just about every feature your heart could desire. Supports keyboard commands as well as the mouse. Does mail merge and multicolumn text. And it's easy to use. Integrates with the rest of the Microsoft line. $195.00. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98009.

ThinkTank 128 is the first of a new type of program known as an outline processor. Lets the user create complex outlines and revise them using moves, cuts and pastes. The interface is not the standard Mac interface but is simple to use and efficient. The program is speedy. Printer support is limited, but files can be printed in a draft-style mode. Only for 128K owners; 512K owners should get ThinkTank 512 which has many more features and is more useful than the price differential would indicate. $145. Living Videotext, Inc., 2432 Charleston Road, Mountain View, CA 94043.

ThinkTank 512 is a word/outline processor. It is a very fast, intuitive thought and organizational tool that can handle word processing in the midst of structuring a plan or outline. Constructing a multitiered outline is easy. This can be done with the mouse or entirely from the keyboard. A key feature is the ability to store and paste graphics into outline or text format. Graphics images are stored in a Scrapbook and configured to produce slide presentations and animation. ThinkTank documents can be printed out with headers and footers and will include a complete table of contents. $245.00. Living Videotext, 2432 Charleston Road, Mountain View, CA 94043.

1stMerge is a mail-merge program that integrates data files with documents after a blueprint for documents has been designed. Features on-screen help, and the ability to add and search records. Requires *MacWrite*. Fields are limited to 50 characters in width. Changes can't be executed on document when in the merge mode. Good for mass mailings, including envelopes and labels. $95.00. DeskTop Software Corp., 244 Wall Street, Princeton, NJ 08540.

MacWrite is the basic word processor that comes with the Mac. While it does not have every bell and whistle, it is more than adequate for most users. Features of the latest version (4.5) include document size limited by available disk space, search and replace, and scroll bar indication of page numbers. Easy to use and well documented. Comes with all but consortium Macs. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014.

DATABASES

Consultant is a program that lets users organize ideas and helps in thinking through and solving problems. Easy to use thanks to extensive use of icons and on-screen help. This program introduces some low-level AI (artificial intelligence) concepts. $200. Organization Development Software, Inc., 1605 S. Garden Street, Palantine, IL 60067.

FactFinder is a freeform information organizer or medium-duty database. Users enter data on to factsheets in any manner desired and select keywords. Factsheets are associated in groups called stacks. Searches are by name or keyword. The speed is barely adequate and only one factsheet can be open at a time. Printing and cutting and pasting between factsheets are supported. Has a good manual, on-screen help and on-disk tutorial. Publisher offers free telephone support (800 number). $149.95. Forethought, Inc., 1973 Landings Drive, Mountain View, CA 94943.

FileMaker is a nonrelational database that combines lots of power with ease of use. Data entry is extremely flexible and all items in all fields are indexed so that multiple criteria searches are both simple and fast. Calculation fields make the creation of invoices and similar documents a snap. Reports can include graphics, and multiple data layouts are easy to construct. $195.00. Forethought, Inc., 1973 Landings Drive, Mountain View, CA 94943.

Filevision is a simple database that builds records from references to graphic objects produced on the screen. It is not a powerful database but its approach offers a good deal of creativity. It allows objects on screen to be linked to other objects creating a hierachical file structure. Like the Mac, it can change the way you think about data. $195.00.

Telos Software Products, 3420 Ocean Park Blvd., Santa Monica, CA 90405.

Habadex is a telephone directory/database with list, label and mail merging capabilities. Very easy to use, but information entered takes up space permanently. The meager capacity of 250 or so records cannot be extended or ported to any other program. The schedule and things-to-do features are useful and Haba Systems also offers telephone dialing. $99.95 Haba Systems, Inc., 15154 Stagg Street, Van Nuys, CA 91405.

Helix is a true relational database that makes extensive use of icons. Excels in database setup and forms generation. Setup is made easy by the adherance to the Mac interface. The manual is clear, thorough and well-indexed. Too complicated for most simple database applications, excellent where relational database application is required. Supports multiple windows. Requires a 512K Mac and an external drive, but is slow on that configuration. The recommended hard disk is really required to use *Helix* effectively. $395. Odesta, 3186 Doolittle Drive, Northbrook, IL 60062.

MacLion is a true relational database program. Can handle all databasing requirements, although set up may require outside (consultant) help. Has a built-in programming language (LEO) and can be customized for any application. Reasonably flexible and easy to use once a database is set up. Can handle very large files as well as multiple files. $379. Computer Software Design, Inc., 1904 Wright Circle, Anaheim, CA 92806.

Microsoft File is a flexible data manager. Creates files for variety of data, including simple graphics. Files created in simple row/column format, but reports and forms are easily customized by moving field names around on a blank form. Sorting limited to approximately 5000 records on 128K Mac. Length of fields and records, number of records per file extremely large with more memory. Easy to use, well designed and full featured. $195. Microsoft, 10700 Northup Way, Bellevue, WA 98004.

Omnis 3 is a power database, featuring concurrent multiple file management. Can handle 24 files, 12 at a time, and is fully relational. Allows user to create custom environments including user-defined menus, commands, and dialogs. Good report generation capability. Comes in single and multiple user versions. $495 (single user version). Organizational Software Corporation, 2655 Campus Drive, Suite 150, San Mateo, CA 94403.

1stBase is a small, easy to use database that allows users to join or append files. It is the simplest, most accessible relational database available for the Mac. Supports calculated fields including statistical summaries such as averages. Integrates with *1stMerge* and *1stPort*. $195.00. DeskTop Software, 244 Wall Street, Princeton, NJ 08540.

INTEGRATED SOFTWARE

Crunch is an icon-driven relational spreadsheet program that features versatile charting and database capabilities. It has strong financial logic, date, and mathematical functions. It's spreadsheets can be linked. The manual is clear and concisely written. Macros are not supported. $195. Paladin Software Corporation, 2895 Zanker Road, San Jose, CA 95134.

Ensemble lets you create a database of words, pictures and/or numbers; graph data; generate custom forms and link files for applications such as mail merge. Can perform calculations and math functions on data. Compatible with *MacWrite* and *MacPaint* files, and any program using cut and paste operations. Capacity limited by RAM and disk size. Easy to use, light general database with graphics. $299.95. Hayden Software, 600 Suffolk Street, Lowell, MA 01854.

Excel is THE power spreadsheet. Of the Mac, of the world. Has 256-column by 16,384-row capability. Features include a powerful easy to use macro function (with a recorder to make creation simple) and elaborate charting facilities. Can link multiple spreadsheets. 512K Mac and external drive required. $395. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98009.

Jazz provides extremely well integrated modules for word processing, graphs, worksheets, database and communications. Each of the modules is substantial and the worksheet is packed with powerful functions. The truly exceptional feature is HotView, which allows relational data to be placed in word-processing documents that will then automatically reflect changes in the source documents. *Jazz* provides adequate coverage of most data and communications needs for small businesses. Require 512K Macintosh *and* external disk drive. $595.00. Lotus Development Corp., 55 Cambridge Parkway, Cambridge, MA 02142.

OverVUE 2 is a power-packed relational database that features extensive sorting, summarizing and report generation. Its data can be enhanced with charts and data entry is speeded up with macros. The program places powerful statistical capability in the hands of users who are willing to study a well-written manual. *OverVUE* tries to anticipate every need conceivable for manipulating data. One of its best features is its ability to communicate with a wide variety of both Mac and IBM software. $295.00. ProVUE Development, 222 22nd Street, Huntington Beach, CA 92648.

Quartet, an integrated program that works on a 128K Mac, contains a powerful spreadsheet with a full range of math, logic and statistical functions including boolean functions. Can also be used as a database, and provides good quality charts, such as pie, bar column and plotted lines from selected spreadsheet values. Should be especially useful in conducting financing calculations and setting up tables. Data can be transferred to other Mac software via the clipboard, but no facility has been made for converting ASCII or SYLK format files. Documentation is adequate but not as well organized as it could be. $199.00. Haba Systems, Inc., 15154 Stagg Street, Van Nuys, CA 91405.

UTILITIES

Battery Pak is a set of eight handy desk accessories including scientific and RPN calculators, a background text file printer, a 250-page note pad with search and phone dialing capabilities, a disk file utility, an accessory to launch another application without returning to the desktop and a calendar with notekeeping and search capabilities. Comes with an installer and the best manual we've seen in a long time. $49.95. Batteries Included, 30 Mural Street, Richmond Hill, Ontario, L4B 1B5 Canada.

Copy II Mac was one of the first back-up programs available for the Mac. Does efficient sector and bit copies and in its latest version (4.0) can back-up virtually all Mac software. Features graphic displays of copy progress. Comes with *MacTools*, a multiuse utility that can recover many damaged files. $39.95. Central Point Software, Inc., 9700 S.W. Capitol Highway, Suite 100,

MINI FINDERS

Portland, OR 97219.

ExperLISP is a very buggy, but still incredibly useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. System crashes are too common for a language this useful and expensive. Requires 512K and either an external or a hard drive. $495. ExperTelligence, Inc., 559 San Ysidro Road, Santa Barbara, CA 93108. ttt

ExperLogo is a version of the popular teaching language, Logo. Features three-dimensional graphics using "bunnies" rather than the usual "turtles." Very speedy, smooth program. Comes with an excellent manual. $149.95. ExperTelligence, Inc., 559 San Ysidro Road, Santa Barbara, CA 93108. ttt

Lock-It allows users password control of all their documents. It works quickly and efficiently to protect confidential material. Unfortunately, it is not perfectly bug-free, and a failure will cause future lack of access to data. If you absolutely need to protect data and are very careful, you can use *Lock-It*, but the average user should stand clear. $29. Assimilation Process, 485 Alberto Way, Los Gatos, CA 95030. t

Mac Memory Disk creates a RAMdisk on 512K Macs. The RAMdisk's size is user selected up to 316K. Has auto startup and auto file transfer features. Simple to use, on-screen dialogs prompt for all actions. $29. Assimilation Process, 485 Alberto Way, Los Gatos, CA 95030. ttt

Mac•Tracks allows you to tie up to 5,000 keystrokes and mouse movement operations to any command key that you choose. In effect, it creates keyboard-called macro commands. The various controls and index (to see what you already created) reside in the Apple menu as a desk accessory. Documentation, however, is inadequate, and behavior is sometimes not what you expect. Invaluable in some places (*Smartcom II*, for instance), it needs some improvement before it gets much use. $29. Assimilation Process, 485 Alberto Way, Los Gatos, CA 95030. ttt

MacAsm is a software development system that allows programs to be written in assembly language. Programmers can assemble, edit and test software, and an integrated resource compiler lets independent applications run from their own icons. $125. Mainstay, 28611B Canwood Street, Agoura Hills, CA 91301. ttt

MacBooster is a disk-caching program that adds a great deal of operating speed to a 512K Mac. Installs easily from its master disk. The only drawback is that it lacks an autostart feature, and so users must remember to start it up each time a new disk is booted. This program can increase the speed of your 512K Mac by 2 to 5 times. $50.00. Mainstay, 28611B Canwood St., Agoura Hills, CA 91301. ttt

MacForth is an implementation of the popular FORTH programming language. Level 1 is a simple, introductory version with limited support of the Mac ToolBox. Excellent tutorial and references sections in the manual. Level 2 supports the Mac ToolBox fully. Level 3 extends the language so that professionals can produce standalone applications. All levels are supported by the publisher via telephone and electronic BBSs (the publisher even has a private SIG on CompuServe). $149 (Level 1), $249 (Level 2), $449 (Level 3). Creative Solutions, Suite 12, 4701 Randolph Road, Rockville, MD 20852. ttt

Macintosh Pascal is Apple Computer's version of this very popular programming language. Loaded with innovative teaching features, this interpreter is an excellent introduction to Pascal. Superb usage of the whole Mac interface makes this the best way to learn Pascal. The documents are mostly references, so be sure to get one of the tutorial textbooks in your bookstore. $125.00. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014. tttt

Macintosh 68000 Development System is a fairly traditional assembly language package. The two-disk set provides an excellent editor *(Edit)*, an efficient assembler, a linker, an executive, and a resource compiler called *RMaker*. The files included in this two-disk set have all the basic equates, process definitions and trap calls. Good documentation includes a copy of the Motorola 68000 handbook. Also included is a copy of the "phonebook" edition of *Inside Macintosh*. $195. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014. tttt

MacNosy is a global disassembler. A very advanced user can use this program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going IF you have the skill to guide it. The documentation is sparse. For pro's only. $70.00. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025. ttttt

MacZap is a three-part disk and memory utility. It can be used to recover some damaged files and disks, compare disks, analyze disk structure and make back-up copies of most disks. Fairly intimidating due to its enormous power. Has a good manual. $60. Micro Analyst, Inc., 5802B Gloucester, Austin, TX 78723. tttt

MS BASIC was the Mac's first programming language. It has come a long way since its infamous version 1.00. The current version (2.0) of this interpreter (it's not a compiler) now supports the ToolBox, and the whole Mac interface can be implemented in your programs. For nonprogrammers, there are lots of programs available (in user group libraries and magazines) to run. Easy to use. There have been several versions; be sure you get version 2.0 or higher. $150.00. Microsoft Corporation, 10700 Northup Way, Bellevue, WA 98009. ttt

MS Logo from Microsoft's MacLibrary, written by LCSI. An excellent implementation of Logo, taking full advantage of the Mac's user interface. Uses three windows: *text* along the bottom, for commands and actions; *program*, for defining procedures, and *graphics*, for program execution. Turtle looks like a turtle, and its screen actions are very precise. Windows can be resized, removed and moved about. $124.95. Microsoft, 10700 Northup Way, Bellevue, WA 98004. tttt

Quick & Dirty Utilities, Volume One is a disk chock full of the handiest programs you have ever bought. Included is a super disk cataloging program, a desk accessory mover, a font manger, a document launcher (when you boot a disk it launches a document), and more. Several desk accessories, including a menu bar clock and a terminal, are on the disk. Fileinfo and Q&D Filer are two file management desk accessories that you'll wonder how you got along without. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. ttttt

Switcher is Andy Hertzfeld's contribution to Mac productivity. This program lets users run several programs at once (up to eight on a 1-megabyte or larger machine). Switching between the programs is near instantaneous. Slick and easy to use; every 512K Mac user should get it. Runs on 512K Macs and larger. Free. Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014. ttttt

TimeBase keeps track of daily, weekly and monthly scheduling. Data from other Mac applications can be used within any schedule user create. Files are limited to space available on the disk. Not easy to use unfortunately. $149.95. Soft-Design, Inc., 14145 S.W. 142nd Avenue, Miami, FL 33186.

TurboCharger is a disk-caching program. It works by storing frequently used portions of a disk in a memory buffer, and can dramatically speed up operation (250 to 500% improvements are common). Features include auto-startup and write buffering. Only works on a 512K Mac but is a must for one. $95.00. Nevins Microsystems 210 Fifth Avenue, New York, NY 10010.

X/L Serve converts a Mac XL into a disk and print server. Uses the AppleTalk network and is easily hooked up. Users can partition the Mac XL's hard disk into multiple volumes (read-only for common access and read-write for private access). Runs in the background on the Mac XL, so users can work on all machines in the network. Comes with backup and restore utility. $195.00. Infosphere, Inc., 4730 SW Macadam, Portland, OR 97201.

MUSIC

ConcertWare is a sophisticated three-part program. Lets users either create their own instruments or use any of 34 provided in composition that are created in a writer module. A player module plays the best sounding music available from your Mac's sound circuits. Comes with over 200 compositions; many more are available in the public domain. $49. Great Wave Software, PO Box 5847, Stanford, CA 94305.

ConcertWare + is an enhanced version of *ConcertWare*. Has different instruments and the ability to use any four of a set of eight at any point in a musical piece. Can read and use *ConcertWare* and *MusicWorks* files. The best program for those who want to listen to music on their Mac. $69. Great Wave Software. PO Box 5847, Stanford, CA 94305.

MusicWorks allows the user to create and play simple musical compositions. Music entry is by either a grid or a staff and is very easy. Users can select various instruments and modify each to produce new effects. Compositions are limited to 64 measures and overall limitations make this a beginner's program. There are many public domain music files available to play. The manual is clear and thorough. $79.95. Hayden Software Company, Inc., 600 Suffolk Street, Lowell, MA 01854.

Professional Composer is aimed at music professionals. Produces performance-quality sheet music; has only limited playback facilities. $495. Mark of the Unicorn, 222 Third Street, Cambridge, MA 02142.

DIGITIZERS

MicronEye is a rather crude digitizer. Hard to use and capable of only doing a half screen at a time, with no facility for easily matching up parts. This was the first Mac digitizer and has been surpassed by newer models. $395. Micron Technology, Inc., 1475 Tyrell Lane, Boise, ID 83706.

ThunderScan laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are being created or afterward. Compatible with 15-inch ImageWriters. Output has been optimized for LaserWriter. $229. Thunderware, Inc., 21 Orinda Way, Orinda, CA 94563.

ACCESSORIES

Ergotron is a Mac (and external drive) holder that allows a full range of swiveling and tilting. Very strong, this well-made unit is also very easy to use. Simply raising the Mac 4 inches off the desk results in a more efficient viewing angle for users. $99.95. Ergotron, Inc., PO Box 17013, Minneapolis, MN 55417.

Mac Daisywheel Connection is the most straightforward way to hook a Mac to a letter-quality printer. Works well with most popular printers and is easy to install and use. $89. Assimilation Process, 485 Alberto Way, Los Gatos, CA 95030.

MacNifty Joystick Convertor: Plug the convertor to the mouse port and you can use any standard nine-pin joystick or controller, such as those manufactured for Atari or Commodore 64 computers. Package includes a tiny Amiga-style joystick, a pint-sized powerhouse that literally operates with a single finger on the stick. Cursor movement speed is adjustable. $44.95. Kette Group International, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

MacNifty Stereo Music System converts Mac sounds to simulated stereo by splitting highs and lows between two powerful speakers. User controls bass, treble, balance, low and high impedance output, and most importantly, volume. Hear your music compositions the way they were meant to be played. $79.95. Kette Group International, 13895 Industrial Park Blvd., Minneapolis MN 55441.

MacNifty Switch allows any port on your Mac to connect two peripherals simultaneously. Turn the knob to switch between the two devices. Plugs are friction-fit, not screw-fastened like most Mac peripherals, so in some cases may loosen by themselves. $34.95. Kette Group International, 13895 Industrial Park Blvd., Minneapolis, MN 55441.

MacStation is a compact workstation for a Mac, ImageWriter and external drive. Made of strong plastic, it is reasonably attractive. Well vented; will not cause a Mac to overheat. Only flaw is that printer paper feed doesn't really work; users will need space behind the unit to store paper. $95. The MicroRain Corp., PO Box 96008, Bellevue, WA 98009.

MacTablet is a stylus-driven graphics tablet. Users can easily sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Works well with all Mac software, including *MacDraw* and *MacPaint*. Allows concurrent use of the mouse. $495. Summagraphics Corp., 777 State Street Extension, Fairfield, CT 06430.

Mousetrak is a fabric-covered foam mousing pad. It will increase the efficiency of your mouse while helping keep it clean. Pad comes in a variety of colors. Particularly useful in the typical office desk environment. $10. Moustrak, Inc., Suite 503, 1 Weatherly, Mill Valley, CA 94941.

Omni-Reader scans optical character (OCR) text and inputs the text into Mac software. Requires carefully prepared text and is very slow as the actual scanning is done by hand, moving the scan head in a guide over the text. $799. Oberon International, Suite 630, 5525 McArthur Blvd., Irving, TX 75038.

Mac Turbo Touch is a mouse replacement device. Features include 2.5-inch diameter track ball with control buttons to either side. Users either love it (and refuse to use anything else) or hate it; very few so-sos on this product. Takes a few days to get used to. $129. Assimilation Process, 485 Alberto Way, Los Gatos, CA 95030.

THE CHECK IS IN THE MODEM

(continued from page 70)

services can be done on-line, saving the customer a trip to the bank.

When a customer signs up for service, he or she is given a free password for Dow Jones News/Retrieval, normally priced at $75. (You may already have gotten a password when you bought your modem, but if you didn't, here's another chance.) The service is available to *Direct Access* subscribers, charged on a connect-time basis with no monthly minimums. Using Dow Jones, customers can access current stock quotes, business and economic news, financial and investment information, plus movie reviews, weather reports, airline schedules, sports news, electronic shopping, an electronic encyclopedia, financial disclosures and more.

Spectrum: The Accent's on Options

Chase Manhattan's *Spectrum* service is being offered to anyone with a bank account at Chase or with a brokerage account at Rose & Company, a discount brokerage firm. The basic *Spectrum* service costs $5 a month and includes Account Balances, Bill Payments, Funds Transfers, Electronic Checkbook, and a Spending Tracker that lets computer owners set up and maintain records according to date, payee, type of expense, method of payment, or variable factors chosen by the user such as tax-deductible items. The service also includes the Chase Product and Rate Guide, which lets on-line bank customers check on all current Chase interest rates, and request applications for new accounts by modem. Checking account transactions are kept on file for 90 days, while accounts reviewed with the Spending Tracker go back up to 18 months.

There is no on-line or connect charge. For a monthly fee, users are given unlimited access time on all services they subscribe to. In addition, a financial game called *Investquest* is available free to all subscribers.

Optional *Spectrum* services include "Video Broker," a direct hookup to brokerage accounts held with Rose & Company. Information available includes Quotes & Market indicators and the Symbol Directory. Using the modem, customers can place orders with the brokerage firm, which substantially discounts commissions from the former New York Stock Exchange fixed commission rate, up to a discount of 75%. (For example, customers would save about $15 on a transaction involving 200 shares at $10 apiece, or $47 on a deal involving 300 shares at $20. "Video Broker" is available to *Spectrum* subscribers for an additional $5 monthly fee.)

Additional options are "Portfolio Management" ($6/month); which offers Portfolio Tracking of all securities in a *Spectrum* portfolio (stocks bought through another broker can be manually entered into the computerized portfolio) at both full and unit cost, and a Symbol Directory, which lists current OTC securities, stocks and option prices; "Investment Information" ($4 / month), which delivers the Market Letter Digest and Economic Reports, both of which feature abstracts drawn from current financial newspapers; and "Financial Planner" (as of press time, Chase forecast a charge of approximately $5 for this optional service). The latter offers several sub-options, including "Goal Planner," "Investment Evaluator," "Tax Alert" (tax news and tips), and "Money Watch."

"Investment Evaluator" is a tool for investors looking for the most comfortable balance between risk and return; it and "Goal Planner" use numbers entered by the user (personal income and tax rate, savings goals) to make various what-if projections.

All of the banks we spoke to said they are highly sensitive to potential security problems. Chase tries to sidestep potential dangers with the use of a three-tiered authorization code. First, there's a sign-on ID code, chosen by the customer. Once that has been accepted, the bank's computer requests a personal password that's been assigned by the bank. Finally, a special keyword unlocks the system.

Excel: One-Stop Financial Planning

Manufacturers Hanover gives all subscribers to its on-line service, *Excel*, two separate disks plus a personal password. The dual-disk feature helps users minimize the time their phone is tied up by dividing *Excel* functions into on-line and off-line activities. Subscribers are given the choice of paying $12 a month or $100 a year, and all *Excel* services are included in the basic package.

Service includes routine banking transactions, like monitoring balances and transactions that occurred since the last banking statement; establishing recurring payments; opening accounts and getting the bank's product information; and automatic payment of bills (over 700 merchants, service companies, utilities and financial institutions are included in the Manufacturers Hanover file).

Excel's "Financial Strategist" feature helps consumers identify financial goals, such as a child's college tuition or buying a home, and then offers advice on how to save and plan for those goals. "The Financial Calculator" includes 32 financial formulas that lets users make various what-if projections. The formulas include renting versus buying a home, alternative mortgage calculations, the future value of deposits, how much insurance you need, and the costs of buying a car.

A personal database is included on each user's personal disk, so that relevant financial information can be saved to an easily-accessible record. The personal database include *Excel* "Files," which saves, categorizes and reviews transactions; "Expense Manager," which tracks and categorizes monthly and annual expenses; "Calendar," a personal reminder for important dates like CD maturities and birthdays; "Financial Records," which stores stock and bond data, plus bank, insurance and credit card numbers; and "Net Worth," a worksheet that analyzes assets and liabilities to determine your net worth.

Excel is on-line 24 hours a day, seven days a week.

Pronto: Link Charge Cards at No Charge

Pronto, available in New York through Chemical Bank, was the first electronic banking and information

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Sony DS/DD (10)	39.95	Mac 10 mb.	**1069.95**
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Mac Tilt	**69.95**	Thunderscan	179.95
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service to be licensed to banks nationwide, having been in operation since September 1983. The service is available at banks throughout the country.

At Chemical, basic 24 hour-a-day *Pronto* service costs $12 a month, and includes "Home Banking" (balance inquiry on all accounts, plus up-to-date information of VISA and MasterCard accounts with the bank; funds transfer; automatic bill payment; an electronic statement and checkbook register; and a budgeting review that helps organize income, expenses and taxes into up to 50 categories; "Account Maintenance"; "Electronic Mail," which offers a bulletin board through which users can communicate with each other and the bank itself; and "Information Services."

"Information Services" is a collection of economic and business briefs.

As of press time, *Pronto* had been licensed to eight other banks throughout the country. In New York, subscriptions were above 16,000, and Chemical Bank Senior Vice President Robert B. Willumstad reported that "More than 1200 households are signing on monthly.

Like many other micro-based banking services, *Pronto* protects subscribers' privacy through the use of a three-tiered authorization code. It also uses the "tell me twice" error-checking, which prevents users from inadvertant slip-ups.

MacBanking for Business

Pronto introduced "The *Pronto* Business Banker" in April 1985, following a six-month market test. It's the first U.S. computer-based banking service designed exclusively for businesses with annual sales between $500,000 and $10 million.

A subscription costs $30 a month and offers services such as "Funds Transfer," "Balance Inquiry" (updated at 9 AM each morning); access to a revolving business credit line; a checkbook register; credit payments; electonic statements; electronic mail; and the "Business Information Service." The latter offers financial and investment news, and a "Worldwide Trade Directory" that puts the user in touch with experts in international finance, cash management, and export agency programs. A customizing feature lets the business user add or delete accounts and authorize personnel to access only certain parts of the data. For example, a company president could allow users of a particular account to determine balances and obtain statements, but not to transfer funds between accounts.

"*Pronto* Business Bankers" can take out personal subscriptions to the home service for a reduced fee of $8 a month to be able to transfer funds between business and personal accounts, plus access balance inquiries and electronic statements for personal accounts.

In the market research done before introducing the "*Pronto* Business Banker," Charles Forbes, Pronto USA Vice President of Sales and Marketing, found that "In a national survery of 1500 small businesses, we learned that 3 out of 10 already had microcomputers, and almost half of all businesses intended to have a microcomputer for business use by the end of 1985. More importantly, one in three of those businesses surveyed said they would probably subscribe to an electronic banking and information service, and 27% indicated they would develop a new relationship with a bank offering such a service. Simply put, '*Pronto* Business Banker' enables small firms to track updated account information daily, to transfer idle funds into higher-yielding accounts, and to pay down loan balances when they occur, minimizing interest charges — all electronically, by microcomputer."

Future Forecast

As computer banking services become more widely available and technological innovation continues in both hardware and software, Mac users will probably see competition force down monthly charges and increase the popularity of banking-by-modem.

Now if they could just find a way to get cash out of a disk drive

THE WIZARD IS IN

(continued from page 124)

The game is even larger in scope than the vast map in *Ultima II*. Entire continents lie hidden, only becoming known by the bravest — and most foolhardy!

As of this writing, Richard Garriott is putting the final touches on *Ultima IV: Quest of the Avatar*. James Van Artsdalen, who did the excellent translation of *Ultima III*, expects to do the same for *Ultima IV* as soon as it's finished.

Origin Systems allowed **MacUser** a sneak preview of the adventure-to-come, and it promises to be even more involving than its predecessors. The scenario starts the player off at a modern-day carnival, where a chance meeting with a gypsy fortune teller determines the action. The gypsy lays cards on the table and tells a short anecdote about each one, asking the player to choose between the situations. The player's answers to her questions determine where he or she will begin the game — and what type of character will be created.

The character begins alone, though it is possible to pick up loyal followers along the journey. It all depends on how you conduct yourself in a town. The entire game can be changed, for better or worse, if your character behaves or misbehaves extremely. Since emphasis is placed on how you act, not just that you do something, this game scratches the surface of the next generation of role-playing games: those that reward or penalize characters for acting like they should (or shouldn't).

Ultima IV will be much larger in scope than any of the previous games in the series. Townsfolk are capable of having entire conversations, and sometimes offer a much-needed clue if you ask the right question. The terrain is more varied, and players can look forward to setting up camp in the woods — just like they would in real life. Look for a complete review in these pages, as soon as the game is released.

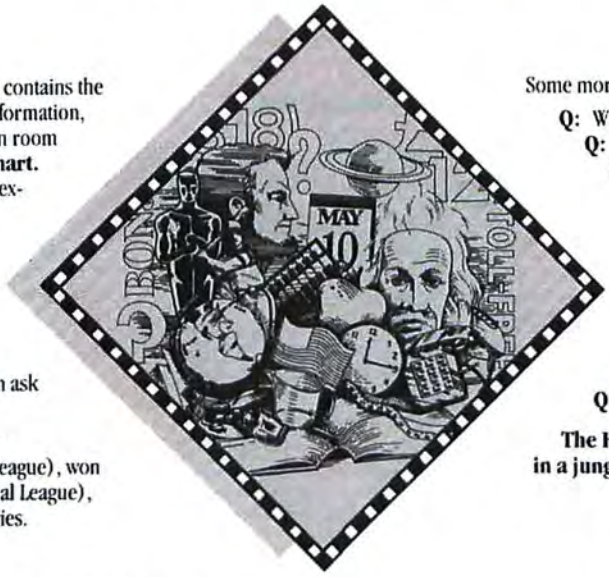
Worlds Await

All of the games profiled in this article are outstanding examples of the role-playing genre. With the popularity of these games showing no signs of slowing down, expect to see even more in the future. Of course, you can also expect to lose plenty of sleep as you stay up to play on for "just another hour," but who can think about waking up fresh for work when there's a dragon literally breathing down your neck?

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Q: How many calories are in 3 cups of wheat flour?
Q: How many Mexican pesos is a US dollar worth?
Q: What is the toll-free number for Apple Computer?
Q: What is the time now in Tokyo?
Q: How do you say "hello" in Japanese?

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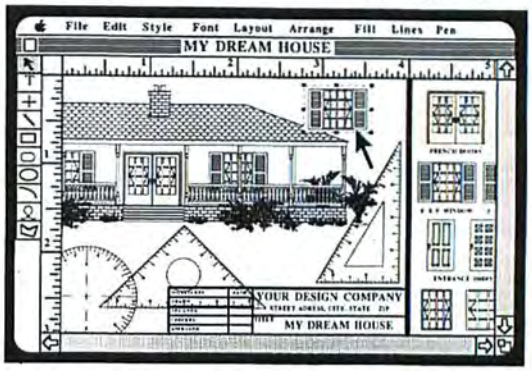
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(continued from page 14)

COPY-PROTECTION KEY CLUBS

A developer gets an idea. He spends the next six months writing source code for an innovative program, tests it, copyrights it and either sells it to a publisher or, with his own funds, writes documentation and tries to advertise and market it himself. The retail disk soon comes into the hands of a computer user who, somewhat innocently, makes a backup copy for his best friend who makes backup copies for his friends who make backup copies for their friends who make backup copies for their friends.

Sound familiar? It should, because more than half the software in existence is distributed in this manner. Unless you are confined to a rather solitary existence, the major obstacle to owning a working copy of any software lies in copying the manual.

Orders from the court . . .

Copyright laws are explicit — it is clearly illegal to copy software other than for one's own use. But it is as easy to enforce these laws as it is to enforce laws against common-law marriages. Last year, after settling for an undisclosed cash amount in a $1 million software copying suit against Health Group Inc., of Nashville, Tennessee, Mitchell Kapor, president of Lotus Development declared "The settlement implies that if (they) are going to have multiple users they are going to purchase multiple copies." Lotus, in fact, underscores the issue by making it clear that the only thing you own when you buy *Jazz* is a manual and a license to use the software. The disks are Lotus' property.

Copy protection is an old issue. When it periodically springs to life the buzzword is "hacker." Hackers are pirating this and hackers are pirating that and if only we didn't have so many damn hackers around we would have this problem.

David Winer, president of Living Videotext, takes a softer line on this problem. "There is nothing (basically) wrong with making a backup copy for personal use but when a supervisor gives a job to a subordinate and hands him a copied piece of software to get the job done, you enter into a gray area." It is this gray area that is creating the impetus for *ADAPSO, The Association of Data Processing Service Organizations,* to call for installation of a hardware device to prevent copying. According to documented reports, pirated business software accounts for over $600 million yearly in lost revenues to publishers.

This is not only the work of hackers who represent truly small scale software carnage. The real offenses are taking place among the office crowd. These are, let's be honest, white collar crimes committed primarily by people who can afford expensive software but who, for reasons of convenience, don't pay for it. It's the radar detector mentality. The speed limit is 55 mph when there's a cop around.

Is Cheaper Better?

One might argue that if the prices of software came down to reasonable(?) levels there would be no need for copy protection. Dave Winer says no. Whether a program sells for $49.95 or $499.95 it is going to wind up bootlegged, and if it is any good, it will be bootlegged to distraction. I am constantly invited to user groups and SIGs and the suggestion is invariably made that I bring along "new" software for copying.

Computer enthusiasts cry loudly that an honor system combined with fair pricing is the best policy. Well, in the best of all possible worlds, that would be true. But this is the real world where honor takes a back seat to expedience. Besides, if you can't get free software, you're obviously not an "insider." This is not true of all computer users but it is certainly true of enough to spur action on the part of publishers.

Industry spokesmen argue that the thousands of man hours that went into developing a piece of software must be paid for. In this they are right. But software developers and publishers are in the same predicament as the doctor who spends at least 12 years training and when the patients pay the bills, it's the cable TV bill that gets paid first!!

Key Clubs

After considering several approaches to the problem, *ADAPSO* wants to reinstitute a new version of an old method of copy protection based on an external hardware device called a *key ring* that would plug into a serial port on a computer but not interfere with use of that port. The device would have slots for four *keys,* each for one piece of software. The software queries the key ring which responds with a return code for verification and all is well. Now moving software to another machine involves moving the key ring as well. Hard disks would no longer require a master floppy to boot an application, but any machine in a network using the application would require a key. An alternative to the key ring is being tried by several companies. A hole is burned into the disk by a laser, and the program will not run if the hole isn't read. This requires booting with a master. ADAPSO will probably choose the key ring solution.

One Step Forward, Three Steps Back . . .

From the standpoint of the publishers this is a workable solution to their problems. Piracy, they say, would not pay. But viewed in perspective it presents several problems. For one thing, it introduces a new standard. The cost of the key ring device will be passed along to the consumer, and while this may be trivial with a $500 program, it will be significant with a $50 program. It will also impose an extra step upon small companies in bringing new software to market.

One of the major aims of the microcomputer revolution was to decentralize computers and diversify their use. Including a lock-box device is a step towards recentralization and duplication of effort. In typical network scenario with a file server, even though protected applications will be available to all users the key must be installed at that station where it will actually be used. Furthermore, software packages that consisted of a single disk will now consist of three separate items: disk, key ring and key. The likelihood of failure is multiplied by the number of components present, and a universal feature of keys is that they get lost.

If a consumer has a choice between two software applications that perform reasonably equivalent functions, the only difference being that one is key protected and the other isn't, the logical choice will be the unprotected version and smaller companies will use this difference to their advantage in marketing new products. This is a division in the ranks that the software industry does not need. The success of the Macintosh was a direct result of building sophistication into the system, not externalizing it. By increasing the number of steps and components required to use a computer, a degree of complexity is reintroduced, the net effect of which will be less use of the system.

Conclusion

It would be nice to end this with a single, simple solution to the problem but there isn't any. The software publishers have a considerable investment to protect and a big job ahead of them in maintaining a discrete identity apart from the rest of the computer industry without making their products a bother to use. I think the answer lies in offering incentives to buying off the shelf, such as services provided. Off the shelf purchases should include, among other things: the tech support that most companies offer to varying degrees; the clear, concise manual that not all publishers provide, and the name of a local service center. The increased use of computers in business and education clearly points out that software undisputably increases personal output.

If publishers devoted a little more time to improving file level compatibility between applications and less to maintaining proprietary standards, software libraries would grow in response to practical evaluations by the only real judges, end users.

IS IT JAZZ OR TIN PAN ALLEY

(continued from page 36)
documents.

Nowhere is there any means of calculating how much work space can be planned in any given application, a serious consideration when laying out a large database. Nor is there any menu facility for finding document size in bytes aside from a slow trip back to the desktop. *About Jazz* under the Apple menu does offer the amount of memory available to any active application in kilobytes.

The *Jazz* communications program makes a definite statement for Lotus' corporate policy. *Jazz* seems to be intended for users of Lotus products. Lotus has made it difficult for Microsoft files to be imported into *Jazz*. This, contrary to what the manual claims, may be a bug in early release software (not prerelease).

Conclusion

Lotus has shipped an impressive though slightly flawed product. The software is ambitious in undertaking so broad a range of task management and no other computer but the Mac could provide so useable an environment, but attractive packaging and a year-long hype doth not power-user software make. The price: $595 retail, is seriously questionable when examining the individual programs. What you are paying for is a collection of nicely integrated but somewhat mediocre applications. There are better databases. There is better word processing, larger, faster and better designed spreadsheets, slicker graphics, more useful communications modules and fancier report generators. No question. But certainly not under one roof with the relational power of HotView and the Functions menu described.

Jazz absolutely warrants some design changes in its spreadsheet and power users are going to lust after macros. Shortcuts taken in designing the worksheet; deficiencies in the communications module; unsophisticated word processing and a serious policy error in not importing files from other non-Lotus programs are keeping a tiger caged.

TERMINAL PROGRAMS

(continued from page 110)
Purpose Data TransPort System." Its terminal facilities are only a part of a larger package. The primary purpose of this program is to take your data files, of almost any sort, and convert them to another format. *1stPort* handles many document formats, including SYLK, DIF, *1stBase* and plain vanilla ASCII. Conversion is straightforward thanks to the clear and precise documentation.

The program is also more than adequate as a simple terminal emulator. There's nothing fancy about what it does, but it does simple communications very well, and it supports Xmodem transfers.

A third module is a built-in simple text file editor, which makes this program easy to use with remote message and electronic mail services. This module only works on text files and is a bit too simple to be really useful, but it is nice to have at times.

Since *1stPort* does file conversion so well its limited terminal emulation makes me wish that the authors had included a bit more in the communications section. MacBinary support would be particularly welcome.

JAZZ COMMUNICATIONS MODULE

(Available only as part of *Jazz*)

Jazz has a very plain vanilla communications module, similar in feel, if not detail, to *MacTerminal*. Thus it is no surprise that autoredial, autologon and macros of any sort are not supported. The module is most efficient at transferring *Jazz* documents to other computers running *Jazz*. Indeed there appears to be a deliberate crippling of the transfer modes so that *Jazz* will only work effectively with other *Jazz* communication modules.

The module does plain ASCII captures reasonably effectively but lacks an adequate screen buffer so that if you stop (Xoff) while capturing, the sending computer is forced to stop. If you are connected to a pay-for-connect-time service this is expensive. The HotView function causes the ASCII capture start to be awkward, requiring two separate steps and multiple mouse movements and keystrokes.

The most serious drawback is in micro-to-micro file transfer. The module implements standard Xmodem error-checking transfers. That works well. The captured material is saved as a binary file that can not be easily converted except to Lotus *1-2-3* or *Symphony* files. If, however, a utility program (there are several available) is used to change the filetype from BINA to TEXT then the file can be easily handled and converted by the rest of Mac software!

Due to its limited screen buffer and faulty Xmodem transfer this module should only be used for communicating with other *Jazz* programs (transferring *Jazz* documents only) or with other micros transferring Lotus *1-2-3* or *Symphony* files only. Otherwise you will be both frustrated and disappointed.

MACTERMINAL

MacTerminal is a very basic telecommunications program and terminal emulation for the Mac user. It emulates DEC VT100s, IBM 3278s and plain teletypewriters (TTYs). Its usefulness as a telecommunications package is somewhat limited since it does not have macros nor any sort of autoredial or autologon capability. The program works reasonably well now that most of the legion of bugs that plagued early versions have been corrected.

One impressive feature is the unlimited and automatic saving of the information that scrolls up off the top of the screen (to disk). Unless this feature is turned off, a record of the entire communication session is stored to disk.

File transfer is accomplished with a unique version of Xmodem. Fortunately other programs now support this flavor of Xmodem and users are not as restricted as they were as to where they send files to and receive them from. A nice feature of *MacTer-*

TERMINAL PROGRAMS

minal file transfers is that the user does not have to do a receive command. This power to do an unattended file receive is very useful. If a user expects to receive a file at a time when the user is elsewhere, the computer can simply be left on running the appropriate document. The file will be captured without human intervention.

MacTerminal really shines at VT100 and IBM 3278 emulation. This is its reason for being. No other program does such a faithful VT100 emulation and this is the only mass market program that emulates the IBM 3278. So users who need to hook their Macs to mainframes should take a good look at *MacTerminal*.

RECOMMENDATIONS AND REPORT CARDS

Picking communications software is not easy. Cost will certainly play a part in the final decision. Those on a very tight budget should consider *Red Ryder 6.0*. A step up the cost ladder leads to *VersaTerm* with its ability to emulate several interesting terminals. At the top of the ladder sit *Smartcom II* and *inTouch*, two true power-telecommunications programs. Most users will find *Smartcom* slightly easier to use and *inTouch* slightly more powerful. Finally, there is *Telescape*. This most powerful Mac telecommunications program is so badly served by its documentation that only users who have experience with Unix termcap or *AE-Pro* should try to unlock its enormous power.

A final note: Unless you require a particular specialized emulator, don't get a program that doesn't support MacBinary. Soon all Mac telecommunications programs will support MacBinary, which is a much superior (and user transparent) way to send Mac files between computers. Until then stick to those programs that already support it; your payback will be greatly increased ease (and speed) of file transfer.

REPORT CARDS

inTouch ↑↑↑↑ $$$$

List price: $149.95. Requires 128K, printer and external drive recommended. Published by Software Masters, 3330 Hillcroft, Suite BB, Houston, TX 77057.(713) 266-5771.

1stPort ↑↑↑ $$$

List price: $95. Requires 128K, printer and external drive recommended. Published by DeskTop Software Corp., 244 Wall Street, Princeton, NJ 08540. (609) 924-7111.

Jazz Communications Module ↑ $

List price: Available only as part of *Jazz*. $595. Requires 512K and external drive, printer recommended. Published by Lotus Development Corp., 245 First Street, Cambridge, MA 02142. (617) 494-1270.

MacTerminal ↑↑ $$

List price: $99. Requires 128K, printer and external driver recommended. Published by Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. (408) 996-1010.

Red Ryder 6.0 ↑↑↑↑ $$$$

List price: $40 (shareware). Requirues 128K, printer and external drive recommended. Published by The FreeSoft Company, 10828 Lacklink, St. Louis, MO 63114. (314) 428-8057.

Smartcom II ↑↑↑↑ $$$$

List price: $149. Requires 128K, printer and external drive recommended. Published by Hayes Microcomputer Products, Inc., 5923 Peachtree Industrial Blvd., Norcross, GA 30092. (404) 449-8791.

Telescape ↑↑↑ $$$

List price: $125. Requires 128K, printer and external drive recommended. Published by Mainstay, 28611B Canwood St., Agoura Hills, CA 91301 (818) 991-6540.

VersaTerm ↑↑↑↑ $$$$

List price: $99. Requires 128K, printer, numeric keypad, and external drive recommended. Published by Peripherals Computers & Supplies, Inc. 2232 Perkiomen Ave., Mt. Penn, PA 19606. (215) 779-0522.

BALANCE OF POWER

(continued from page 52)

of this simulation all seem to work well.

For example, it was easy to find out the gross national product of each of the countries. but to judge governments as left, extremely left, right, and so forth was very important to the ultimate success of the game's mechanics and called for an even, unprejudiced and open mind. Should the designer have faltered and given in to personal feelings the equations would not have worked. The world would "feel" phony.

Although pre-release, the manual we saw did an excellent job of explaining just how everything fits together. And, the pre-release version of the game already appeared bugfree. It should be available, by the time you read this, from Mindscape Inc. (Price as yet unset as we go to press.)

The world simulated in *Balance of Power* feels as right—or as wrong—as the real world that we live in. One of the most succesful computer simulations of all time, this game allows you to enter the computer in order to better understand the world

Years ago, when Chris Crawford designed the game *Legionnaire*, he was responsible for one of the world's first computer simulations of a wargame. Now, with *Balance of Power*, Crawford has designed something new, something exciting, novel and of great import.

Balance of Power is the world's first computer peacegame.

FRAGILE

(continued from page 27)

and operators. Almost complete access to the Macintosh ROMs is provided. One-, two- and three-dimensional graphics are a breeze. All of Quickdraw (I think) is encased in the language. Even bit-twiddlers aren't forgotten: BIT-AND, BIT-ANDC1, BIT-ANDC2, BIT-EQV, BIT-IOR, BIT-NAND, BIT-NOR, BIT-ORC1, BIT-ORC2 and BIT-XOR are all present for those who dare use them.

You could easily muck around in the "rich syntax of *ExperLisp*" for years, discovering new things and new ways to do familiar things. The language has hundreds and hundreds of goodies. Over 450 built-in functions, each carefully crafted in assembly language for maximum speed. And its fast functions "compile" with remarkable speed.

But that's only half the story. The language has hundreds of other, undocumented features. A clever expression (APROPOS "") when entered into the belly of *ExperLisp*, makes the language spill its guts, divulging every magic word hidden within.

What's inside is a system for manipulating "Classes" and "Objects" à la Smalltalk. And lots of tricky, subtle routines. Some work, some don't.

If you like to hack, you'll love *ExperLisp*.

That's what I've got now. When you read this, version 2.00 of *ExperLisp* may be out. It may even include all the features promised by ExperTelligence. If 2.00 lives up to its advance billing, it'll be a killer. Standalone applications will be possible. Users will be able to define their own classes and methods. Many of the undocumented features will be documented. They may even work. ExperTelligence also intends to provide a "Lispized" version of Apple's unreleased *MacApp* with version 2.00. (*MacApp* is the Smalltalky nugget of Apple's "Object Pascal.") Tools for developing *ExperLisp* expert systems are also planned.

What makes a language "good"? It's this: the ability to do many things, and do them easily and well. *ExperLisp*, potentially, fits the definition.

For now, the program is vastly overpriced. And buggy. When you read this, though, it may be different. ExperTelligence states that current owners of *ExperLisp* will be able to upgrade to version 2.00 for the cost of a "disk plus shipping." That's commendable. $495 is still too much, though. How about . . . $245? How about . . . $120?

I've got mixed feelings. I love Lisp. I hate crashing. $495 is too much for anything. I love Lisp.

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EXCEL

(continued from page 42)

range of numbers in a specified field that match certain criteria) and you begin to feel that almost anything is possible.

And Pictures Too

As seen, *Excel* is a bear when it comes to number-crunching—but it's a sensitive artiste when it comes time to prepare the illustrative charts that make your data palatable.

The Gallery menu offers five styles of area charts, seven bar charts, eight column charts, seven line charts, six pie chart varieties, five scatter graph charts and the option to combine more than one style on-screen.

Don't give in to temptation and go overboard on charting.

But, that aside, it's true that *Excel*'s charts can go beyond purely functional presentation and achieve a real beauty of their own.

Everything about the charts is completely controllable from various menus. Bar graphs and column graphs can have numerous different combinations of patterns. Titles may be in various fonts and styles. A background pattern may be used for the entire window, with a different background on the charting area itself. A legend may be automatically added in various positions and sizes. Lines of varying thickness and patterns may be drawn about the chart and the window.

When a number changes on the spreadsheet, the chart changes to reflect what is happening. If you size the spreadsheet and chart windows so that they are next to each other there is almost a feeling of concurrency as the chart updating happens so quickly to reflect the changes being made on the sheet.

Run Silent, Run Automatically

Brace yourself. *Excel* includes a built-in robotic servant. This robot will sit beside you as you work, its cool and calculating eyes will watch as you use *Excel* and its silicon brain will remember and store what it has seen.

While there's no real metal and glass robot packaged in with *Excel*, Microsoft has supplied the next best thing in the feature they call Macros.

These macros areas store often-repeated tasks on disk so that they may be automatically run later. But unlike macros in more primitive products such as *1-2-3*, the macros in *Excel* do not require a genius-level programmer or accountant to design.

A simple macro is created by mousing up to the File menu and choosing the "New" option. Then, from the dialog box, the Macro Sheet choice is taken. Then, from the Macro menu, the "Set recorder" choice is made. A label for the macro is typed in.

Choose a worksheet. Now the "Start recorder" choice is made. From the point that recording starts anything done on that worksheet will be remembered. If, for example, the second to last column's sum is added to the sum of the first column, that action is recorded on the macro sheet. This recording continues until the "Stop recorder" option is taken.

The resulting macro sheet is called a command macro. It may be applied to similar spreadsheets in the future to automatically follow through on the included operations. These command macros may be quite complex and can literally contain a day's labor.

The macros are saved as a macro sheet that may be edited. Minor, or major, changes may be made by changing the macro's text. An *Excel* expert may make use of a macro programming language to type in changes without having to use the recorder. Various sections of each macro may even be cut and pasted to other macros. So, it is possible to have a storehouse of your most-used routines.

The Last Cell

We would ordinarily conclude such a review with benchmarks. But all we can say so far is that *Excel* is fast; faster than *Multiplan*, faster than *Jazz*. We tested a prerelease of *Excel*, and have not yet seen the production version. The version reviewed above did it all and quickly, but Microsoft tells us that the release version will be even faster. In a subsequent issue we will, indeed, put Excel though its paces.

For the same reason, we cannot review the documentation. That supplied to us was prerelease and, while clear and concise, was obviously going to be rewritten and designed for the retail package.

But if the final product is as fast as we have reason to believe it will be, if the documentation is up to Microsoft's usual, we have will have no hesitation in recommending *Excel* to all.

And even if you need word-processing or telecommunications ability, don't rule out this program. Microsoft has packaged it with the latest version of the *Switcher* program from Apple. Using this program you can load *Excel* and other programs together into your Mac.

One of the problems that we did run into with *Excel* is related to the sheer size of the program. *Excel* arrives on two disks. The disk with the program has no real storage space available. The second disk has both the data and the system folder. This means that there is less than 200K of storage on a disk.

We'd also like to see the return of one or two formatting commands that we have become used to from using *Chart*. We particularly missed the beveled borders that the other program does so well.

But, all in all, *Excel* lived up to its promise.

EXCEL: REPORT CARD

Follows Mac Interface	★★★★★
Printed Documentation	★★★★
On-Screen Help	★★★★
Performance	★★★★★
Support	★★★★
Consumer Value	★★★★

Comments: Spreadsheet, charting and databasing in an integrated design.
Best Feature: Ease of charting and general formatting
Worst Feature: Really needs hard disk for best use of The **Switcher** program (included) to add other program modules.

List price: $395 (Current owners of Microsoft *Multiplan* for the Macintosh can upgrade for $200. Current owners of both Microsoft *Chart* and *Multiplan* can upgrade for $100). Requires 512K, second disk drive. Hard drive strongly recommended.

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REAL MEN DON'T USE CUISINARTS



DVORAK'S LAW: YOU KNOW YOU'RE A successful columnist when the total number of photocopies of any one column exceeds the subscriber base of the publication you're writing for.

While this may only happen once in a lifetime, the photocopy machines were sure churning at Apple Computer Corp. after I wrote a column in the *San Francisco Examiner* that described the Macintosh as a "wimp" computer as compared to the IBM PC/AT. The AT is a man's computer designed by *men* for men. "Dvorak, there are photocopies of that article all over the company!" was the report I heard from an Apple source. "A lot of people agree with you."

Until that call, things were going fine that day. But upon hearing that some people at Apple agreed with me I got depressed. I figured I finally did something wrong. I must have been too sensible, too convincing. I couldn't let it happen again because in my experience there is nothing more pathetic than an employee of Apple who is agreeable. I hated to see it.

Okay, so what was all the fuss (or lack of fuss) about?

Simply put, the "bigger the better argument" says that people place value on size. Even soap sellers know this. Like a bigger box of soap, a bigger computer is perceived as a more powerful computer—more for the money. Bigger is better at all levels of society. Computers are no exception.

The AT, for example, is big—it looks like a computer should look. It even has some lights on it. By contrast, the Mac looks like a kitchen appliance. Folklore has it that Steve Jobs demanded that the thing be designed to "look like a Cuisinart machine."

More than a few people are now recognizing the fact that the original Mac is too small to be perceived as the serious business computer Apple wants to sell.

Meanwhile, a few marketing guys picked up on the size problem and we're starting to see an emerging market for products to make the Mac look bigger.

The first product I saw was a device called *MacStation* that was a big plastic box in which you'd put the Mac. On top you'd put a printer and you'd put documentation and disk drives into side pockets. To me, it looks simply terrible. But it does add bulk to the Mac.

Then I heard about Digital Research's Gary Kildall and his thing called a *MacNifiyer*. It's a huge fresnel lens that you place in front of the Mac screen to make the whole machine look bigger. It's an idea that really makes you wonder about Gary. This product will remind you oldtimers of the huge oil-filled lenses placed in front of the smallish TV sets of the early 1950s. They were a joke, too.

All right, finally I got to see the perfect "turn your Mac into an IBM" product. It's called *MacCharlie*. I'm sure it will receive an award of some kind. Basically it's an IBM PC clone designed to use the Mac as a dumb terminal and I/O device in place of its own. The company is Dayna Communications in Salt Lake City. Essentially you get the guts of a clone for about the price of the late PCjr.

What may make this thing go over is the rather elegant way you slip it onto the side of the main Mac unit. The Mac keyboard also slips into a larger keyboard carrier that contains function and cursor control keys. When you're finished the overall unit looks very planned, fairly elegant (especially when compared to *MacStation*), and much more like a business machine—i.e., *big*!

Now I suppose that it doesn't matter to a business guy that the total cost of the thing is more than the combined cost of a Mac and a loaded low-ball PC clone. You have to assume that the buyer of such a system is just using it to fool the boss that he's on the IBM team. All the while, of course, he's diddling with FatBits. Needless to say, in today's office the boss doesn't want to see a Mac *and* an IBM on the same desk. The Mac would have to go. This solves the dilemma.

It's no secret that I'm an IBM user. I've always been a follower of the 8 gang—all those chips that start with an 8 as opposed to the 6 gang. The eights began with the Altair and have moved up to the PC/AT if they can afford it. The sixes buy Ataris and Commodores and Apples depending on how cheap they are. While I'm in one camp, I appreciate and admire the other. The other camp, incidentally, never has a good thing to say about any 8080, Z-80, 8088 or 80286 product or owner.

Whatever the case, the 8 gang has always appreciated big computers. The 6 gang has always appreciated cheap computers. Since the Mac tries to appeal to the 8's it, by definition, should be big. But I digress.

I think the point I finally made is simple. It's not a point about computers, it's a point about people. The point is that if Apple wants to sell to businessmen, then it has to know and understand them. Knowing and understanding doesn't mean sitting back and arrogantly telling them about themselves from your pedestal-based perspective. It means being one of them. This means knowing that businessmen want computers on their desks, not Cuisinarts. It means a feather change for Apple.

I, for one, would be amused if Apple could change its feathers. I'm not holding my breath.

BLAIR THORNLEY

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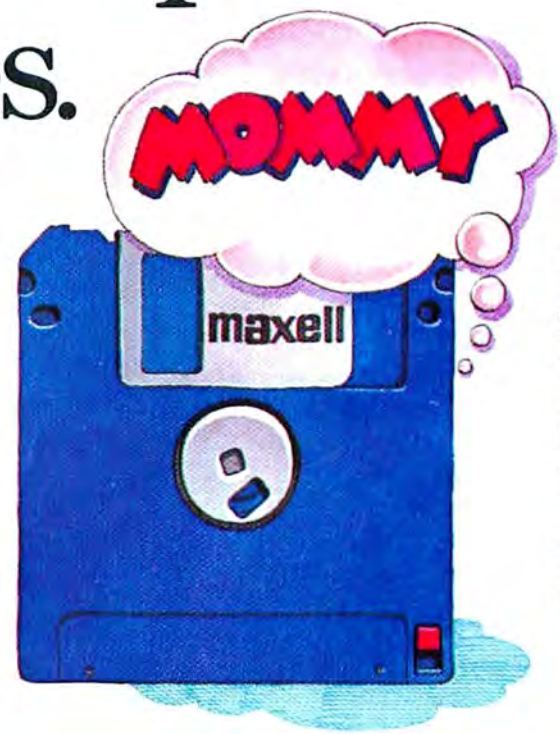
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